A McGRAW-HILL PUBLICATION

Chemical Week

Soviet 7-year chemical plan. Inside story from McGraw-Hill in Moscow . . . . . p. 12

Meet David Holt, British auto specialties maker invading U.S. market . . . . . p. 22

Uranium colors for ceramics are coming back, now made from hexafluoride . . . p. 24

100 million lbs. nylon-6 in '60? Capacity boost is pegged to broadening fiber markets p. 32

No letup in brucine shortage; makers seek substitutes that pass flavor tests . . . . p. 38

January 3, 1959

STEVENS PICE
UNIVERSITY MICROFILMS
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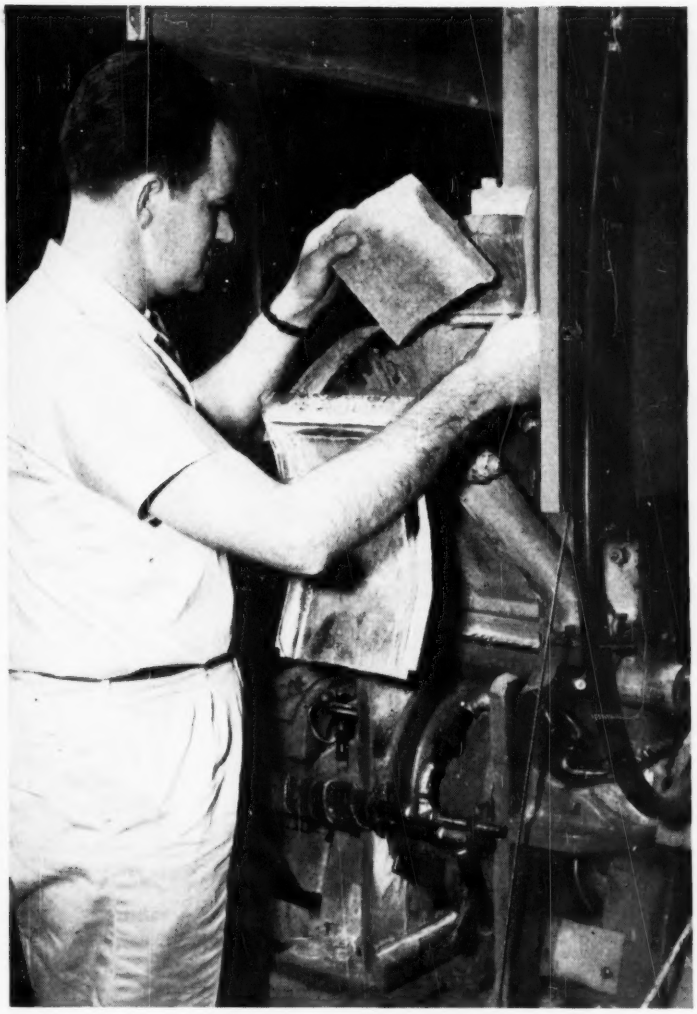

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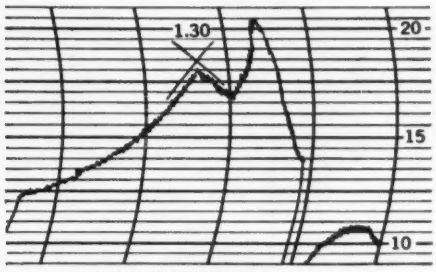
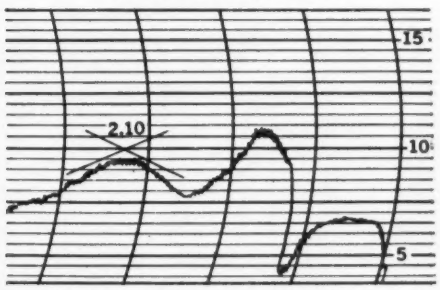
PLIOFLEX 1006—hot, nonextended fast-curing rubber, **APF**-2.40



PLIOFLEX 1502—cold, nonextended light-colored rubber, **APF**-1.40



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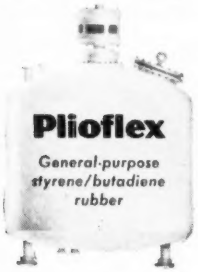
FOR MORE INFORMATION on PLIOFLEX Rubbers —including latest *Tech Book Bulletins*—write Goodyear, Chemical Division, Dept. A-9417, Akron 16, Ohio.



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CHEMICAL DIVISION

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Chemical Week

TOP OF THE WEEK

JANUARY 3, 1959

- **Industry helps set rules for control of water pollution** in Ohio River project ..... **p. 14**
- **Cheaper "electron exchange" resins coming?** New research developments may break cost barrier ..... **p. 20**
- **Squibb turns centennial celebration into top sales year,** also steps up research, education programs ..... **p. 40**
- **Latest in Monsanto-Central Fertilizer legal battle.** CFF withdraws suit charging Monsanto with phosphate monopoly .... **p. 42**

4 VIEWPOINT
Chemical Week is expanding its coverage of Russia with help of McGraw-Hill's newly opened bureau in Moscow.

4 OPINION

4 MEETINGS

9 BUSINESS NEWSLETTER

12 CW's inside look at Russia's chemical industry at start of new seven-year plan: odds are against its catching up with U.S. by '65.

14 Chemical companies on Niagara River lead in formation of mutual-aid council for coping with emergencies.

14 Hercules Powder diversifies into glass-fiber-reinforced plastics, buys Young Development.

14 New water pollution control rules being developed—with industry participation — in pattern-setting studies by eight-state Ohio River agency.

15 Monsanto whacks caffeine price by 40¢/lb.; third big reduction in four years called "skirmish" against imports.

16 Contract for $30-million nitrogen fertilizer plant in Iran highlights latest CPI expansions in Mideast.

17 WASHINGTON NEWSLETTER

20 RESEARCH
New series of "electron exchange" resins developed by Yale's Harold Cassidy promises to cut costs, boost commercial appeal.

20 Pfizer, Varian buy ads to rush technical papers into print. Trend?

22 SPECIALTIES
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24 ENGINEERING
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27 TECHNOLOGY NEWSLETTER

30 PRODUCTION
Statistical quality control is gaining favor in organic chemical production. Monsanto has just put SQC to work in all its plants.

32 MARKETS
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Brucine shortage continues; users eye quassin, other denaturants as possible substitutes.

40 ADMINISTRATION
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42 Central Fertilizer withdraws suit charging Monsanto with monopoly.

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MORE TRADE WITH RUSSIA? This question, in regard to chemical commodities and know-how, has raised the hackles of various CPI segments:

- "A very effective way of undermining our profit economy, of breaking our price structure." That's how the Manufacturing Chemists' Assn. labeled the recent Soviet know-how request.
- "We in the chemical industry have had some good years. The Russian trade threats, if and when they really materialize, are something that U. S. industry can take in stride." That's the view of the comptroller of a large chemical firm.
- "We are merely inviting economic warfare" was the reaction of the American Chemical Society's Walter Murphy.

We said before (*Viewpoint, July 5, '58*): "Consummation of any business deal implies benefit to both parties; and it is illogical to assume that trade with the . . . Reds would results in benefits to them alone."

When you get to page 12 of this issue, you'll find a story about the Russian chemical industry that we feel is unlike any other such story. It's not based on second-hand Russian information collated by U. S. sources in Washington or elsewhere; it's not from tourists' notebooks. Instead, it comes from a skilled reporter, Bill Coughlin, who's been our Moscow bureau chief for the past six months. We're planning further stories from Bill (who returns to London), and from Bob Gibson, who's scheduled for the next Moscow stint.

Despite the cost of a Moscow news operation, we feel we must bring you such coverage. In this context, we consider particularly appropriate this statement quoted in our December 6 issue: "As to dealing with Russia, no one company or industry can properly set itself up as the final judge of what is prudent." Only by having free, responsible and independent sources of information about Russian industry can each chemical maker hope to reach a valid policy judgment.

H. E. Johnson

Editor-in-Chief

Diphenolic Firsts

TO THE EDITOR: Your glowing report on S. C. Johnson & Son's diphenolic acid (*CW, Nov. 29, p. 33*) singularly omitted the fact that DPA was first made in the laboratories of Pittsburgh Plate Glass Co. and described in JACS **76,** 4465 (1954). . . . My patent application, assigned to PPG and titled "Addition Products of Phenols and Keto Acids and Derivatives of the Same," Serial No. 377,-002, was filed Aug. 27, '53. . . . Johnson has taken an option to purchase the rights to this patent, when issued, and hence must be aware of the fact that DPA was first made by [Anthony D.] Kontowicz and myself.

ALFRED BADER
Aldrich Chemical Co.
Milwaukee, Wis.

This situation apparently involves independent and coincidental discovery of diphenolic acid. S. C. Johnson & Son has received British Patent 768,206 and has applied for a U.S. patent on its work with DPA. The company, in response to a CW *query, reports that it recognizes that Bader was first to publish his findings but stresses that its commercial interest in DPA "stemmed exclusively from our independent research in this field."*

The Johnson statement continues: "Inventorship and first disclosure are distinct issues, however. At the present time, it cannot be said with certainty which of the parties was the first to discover diphenolic acid, since this is the very question the Patent Office has under consideration. . . . We feel that it is appropriate to [further] discuss the question of priority of invention only when a [U.S.] patent actually issues."—ED.

Kaiser at Mead

TO THE EDITOR: I have noted with great interest your excellent story on the aluminum industry and its prospects (*CW, Nov. 22, p. 21*). I am also glad that the picture of our Chalmette, La., reduction plant provided such a good lead-off for the article.

I do want to mention, in addition, that the second paragraph of the story inadvertently credits ownership of the Mead, Wash., reduction plant to Reynolds. As I am sure you know, this is a Kaiser Aluminum plant, and three potlines have been reactivated since midyear. At the present time, seven of its eight potlines are in operation.

DUDLEY T. ROSS
Manager, Press Section
Kaiser Aluminum & Chemical Corp.
Oakland, Calif.

$3 \times 24 = 2 \times 36$

TO THE EDITOR: We have read your article "Two Days to Tell Dow's Processing Position" (*CW, Dec. 13, p. 37*) with much interest, and are so impressed with its over-all excellence that it pains us to raise any cavilling criticism.

Nevertheless, we feel impelled to point out that the headline is somewhat misleading. We have long opined that magazines such as CHEMICAL WEEK must operate on 36-hour days, at least. The headline writer undoubtedly had such a day in mind when he titled the piece.

We at Dow have thus far managed to stick to the old-fashioned 24-hour day. Therefore, as stated in the article itself, it takes us three, not two, days to answer a customer inquiry. We trust that inquirers will bear with us this extra day. They'll be glad they did.

L. F. MCCONNELL
Technical Service & Development
Dow Chemical Co.
Midland, Mich.

MEETINGS

Society of Chemical Industry, Perkin Medal Dinner, Waldorf-Astoria Hotel, New York, Jan. 9.

Assn. of American Soap and Glycerine Producers, 32nd annual convention; theme: soaps and stereo '59; Waldorf-Astoria Hotel, New York, Jan. 20-22.

American Society for Engineering Education. Engineering Graphics Division, annual midwinter meeting, Wayne State University, Detroit, Jan. 21-23.

American Management Assn., special conference on plastic packaging materials, Biltmore Hotel, New York, Jan. 21-23.

American Chemical Society, Southeastern Texas Section, third biennial symposium on hydrocarbon chemistry, Shamrock Hilton Hotel, Houston, Jan. 22-23.

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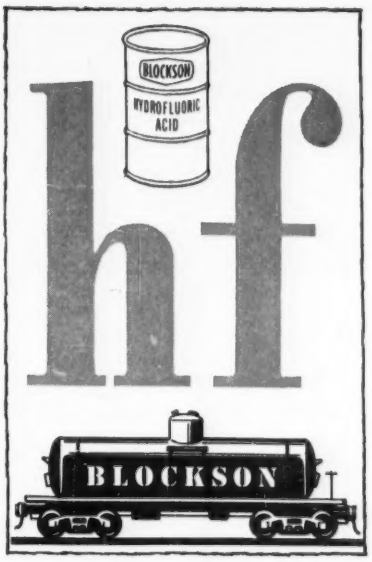

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...news briefs

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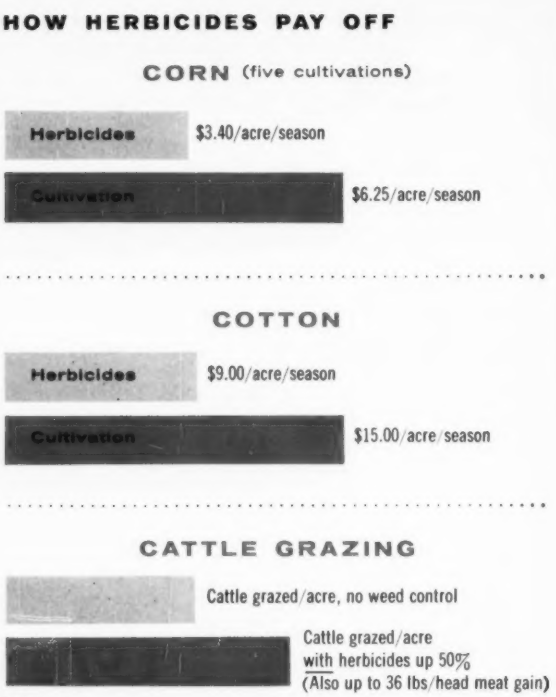
*Granular Herbicides ...

chemical weed killers with a bright future on farms, highways, railroads, plant sites

Granular herbicides are easy to make, package, store, handle, apply. With little drift, they pelt through foliage onto the soil. They offer physical and chemical selectivity. Larger payloads can be carried, no water need be hauled or supplied, application methods can vary to suit the case. Popularity has them in use on farms, orchards, right-of-ways for highways, railroads and utility lines, and in industrial tank farms. M & C's Granular Attaclay is the most widely-used base material—well worth looking at. This is a *starred item*. Use the coupon.

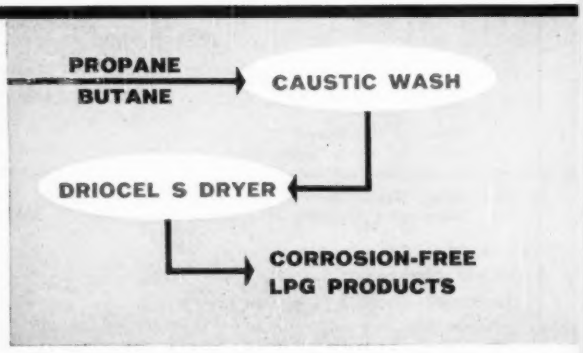


Data Based On Professional Entomological Estimates

Petroleum Refiners

get corrosion-free LPG products with Driocel S desiccant

M & C developed this new desiccant to give 5-way help to LPG processors: (1) thorough drying (2) absence of corrosive reaction with sulfur compounds which escape caustic wash (3) no polymerization of unsaturates; (4) low cost (5) long service life. Specific properties of this product also suggest its use in drying chlorinated and fluorinated hydrocarbons.



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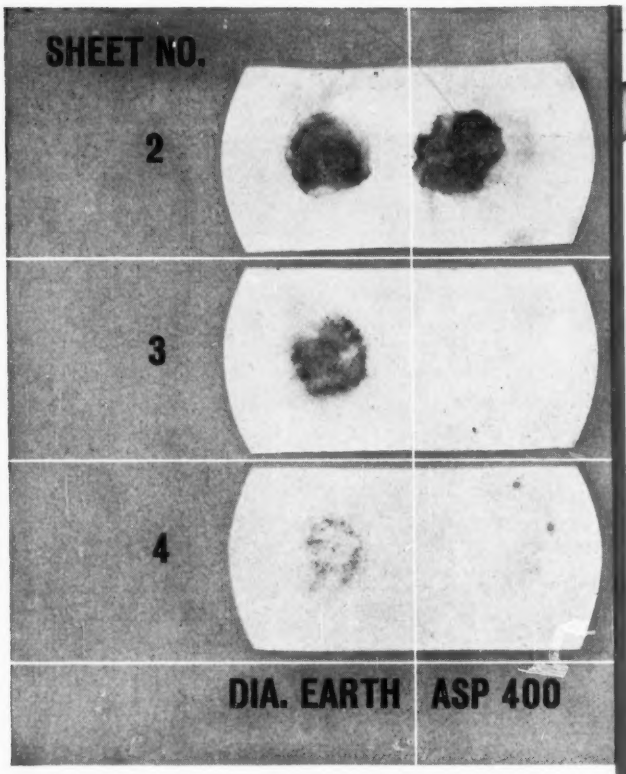
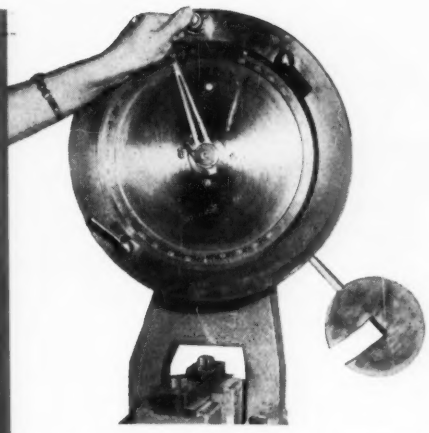


*Adhesive Users: here's superior penetration control to improve products and lower costs (test details on request)

Photo shows superiority of M & C's ASP 400 additive in keeping glue at the glue line (it hardly went beyond Sheet 2 of the stacked papers). Ability of the ASP's to prevent adhesive migration gives adhesive users such positive advantages as: increased mileage; great bond strength; dry, hard products; low costs. Would you like to extend these good points to your glue operations? If one, or both, of the faces you are gluing is porous, it can be done. This is a *starred item*. Use the coupon.



Reinforced Plastic displays doubled impact strength with Aluminum Silicate Pigment filler

Plastic slab under test is a formulation destined for use in making caster wheels up to 12" dia. for industrial trucks. High impact strength is a must. When M & C's ASP filler was introduced, the ASTM 256—56 value jumped to 3.44, just about double industry standard of 1.8. Also improved were the resistance to abrasion and water absorption, and the heat distortion factor.

Manufacturer gets positive production and personnel advantages from thirsty SOL-SPEEDI-DRI® oil and grease floor absorbent

Dust is *taboo* in a miniature precision parts plant. In the operation shown, hardness and dustlessness of Sol-Speedi-Dri help maintain 0.0005" tolerance, cut rejects, improve production, boost personnel morale by keeping plant floors clean, safe and dry.

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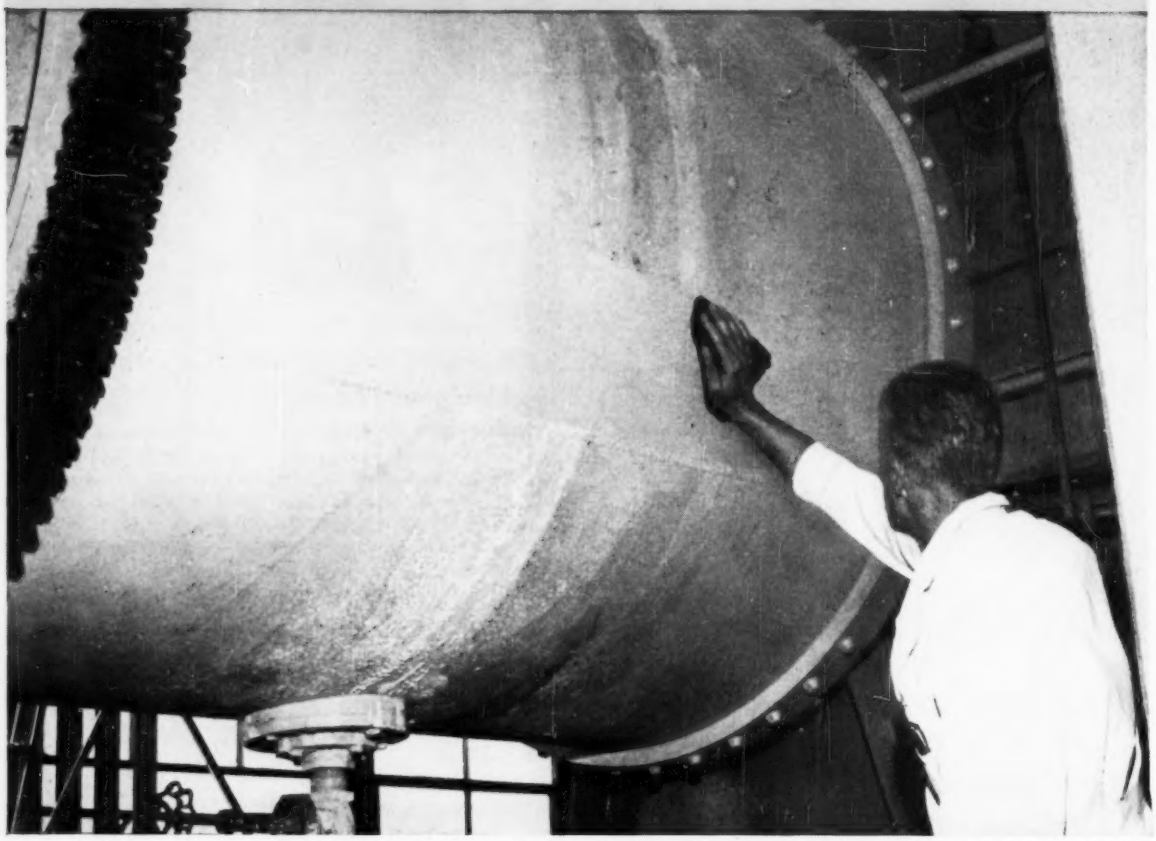

At The Glidden Company, paint drippings from a pebble and steel ball mill are easily cleaned off the Epon resin-based exterior surface coating with a solvent-dipped rag.

Chemical-resistant Epon® resin-based coatings guard paint production equipment from corrosion ...greatly reduce maintenance costs

At one of the paint production plants of The Glidden Company, enamel coatings on equipment were often stripped down to bare metal in only 30 days by the corrosive action of caustic cleaners. Maintenance costs were high.

To reduce costs for general housekeeping and repainting, the grinding mills, storage tanks, structural steel, and concrete areas were coated with Glidden's own Epon resin-based paint, Nu-Pon Cote.

Even though the Epon resin-based coatings are constantly exposed to hot caustic soda solutions, solvents, paint splashes, and abrasion, a fast washing down with solutions of petroleum and ester solvents keeps them clean and bright. Equipment is completely free from corrosion. *The Epon resin-based coatings have already lasted 4 times longer than the previous enamels.*

Most paint users are already aware of the many advantages offered by Epon resin formulations . . . excellent adhesion, resistance to abrasion, impact, heat, and humidity extremes.

Your Shell Chemical representative will explain how you can take full advantage of Epon resins in your paint and enamel formulations. Write for EPON RESIN ESTERS FOR SURFACE COATINGS.

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SHELL

Business Newsletter

CHEMICAL WEEK
January 3, 1959

Improving business continues to bolster '59 prospects.

American Potash & Chemical President Peter Colefax predicts '58 earnings will hit $4.3 million, sales about $48 million. If business conditions continue satisfactory, he added, "we hope for sales of between $51 million and $53 million" in '59.

Borden Co.'s '58 earnings will probably be well ahead of '57's, though sales are expected to be under last year's record $931.2 million. President Harold Comfort said the boost in after-tax net stems from wider profit margins. Sales, however, may decline because of unprofitable operations dropped during the year.

Parke, Davis looks for a "modest increase" in sales and earnings during '59. President Harry Loynd revealed that P-D has "more potential new products in advanced research stages than we've had in some years." For '58, P-D is expected to net $29.6 million on sales of about $170.4 million.

Although National Distillers President John Bierwirth pegs '58 earnings at about $20 million—off 13%—he predicts nets of $25 million in '59 and $30 million in '60. Bierwirth blamed this year's profit dip on $2.5-million startup costs at the company's isosebacic acid plant and a '58 loss of $2.5 million by Mallory-Sharon Metals Corp. — one-third owned by Distillers.

•

And there's bullish news in pulp and paper this week.

Champion Paper & Fibre (Hamilton, O.) plans to sell $20 million worth of convertible debentures to pay off bank loans, boost working capital and finance new expansions. The company, in its application to the Securities & Exchange Commission, says it will offer the securities to present stockholders at the rate of $100 in debentures for each 22 shares held.

Monsanto Chemical has started building a new rosin plant in Nitro, W. Va. The new unit, slated for completion in Jan. '59, will use tall-oil rosin produced at a nearby Monsanto fractionating unit, completed last summer, to make Mersize, a compound used in paper and board to add water resistance.

Standard Packaging Corp. is buying Chemical Paper Manufacturing Co. (Holyoke, Mass.) for about $2.6 million. After the sale this week, Chemical Paper will be known as the Chemical Fine Paper and Board Division of Standard Packaging.

•

A new stock split is on tap for Hagan Chemicals & Controls, Inc.

Directors last week proposed a 2½-for-1 cleavage of the company's common shares, along with a plan to boost the number of authorized shares

from 600,000 to 2 million. Stockholders will be asked to approve the plan at a special meeting set for Jan. 29.

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Petrochemical investment prospects in Venezuela darkened last week as a result of the provisional government's surprise income tax boost.

It will mean a 60% tax rate on company profits, starting with '58 income, instead of the former 51% levy. The first sharp reaction came from Creole Petroleum Co. (subsidiary of N.J. Standard): "We are now placed at great competitive disadvantage. We will undoubtedly lose markets . . . inevitably this will lead to reduction in investment." Creole produces about 44% of Venezuelan oil, will have to pay an extra $80 million in taxes as a result of the decree. The new tax rate was partially offset by repeal of the 0.5% tax on gross operating revenue.

The only big chemical project slated for Venezuela next year is the Petrochemical Institute's $12.5 million, six-plant complex to produce sulfuric acid and derivatives. A privately owned, $1.2-million carbon black project is also planned.

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But doing business overseas may be a bit easier from now on. Late last week, 10 European nations took steps to facilitate convertibility of currency—and this is taken as an expression of a more liberal trade attitude. However, U.S. subsidiaries already in Europe probably won't be greatly affected by the change.

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Yugoslavia's chemical industry will get a boost from the U.S. As part of a new $130-million economic aid package, the U.S. Development Loan Fund will lend Marshal Tito's neutralist-minded state $22.5 million to build a nitrogen fertilizer plant, and about $1 million to purchase pharmaceutical raw materials from the U.S. Russia was originally supposed to finance the nitrogen plant, but withdrew its support when political relations with Tito dulled.

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Less fertilizer produced, more power sold to industry—that's the essence of Tennessee Valley Authority's fiscal-year '58 report, issued this week.

Volume of TVA fertilizer shipments dropped 10%, to 257,546 tons. Shipments of diammonium phosphate increased more than 50%, to 22,207 tons; and shipments of two new products—ammonium phosphate nitrate and experimental granular fertilizer—amounted to 3,452 and 2,627 tons, respectively. Shipments of all other items declined.

While most of TVA's big power customers curtailed operations because of the recession, some—notably Monsanto, Reynolds, Hooker, Tennessee Products & Chemical, Victor Chemical, Pennsalt—were buying more electric energy than in '57. Meanwhile, TVA's average power price on sales to industrial users rose from 3.99 to 4.21 mills/kwh.

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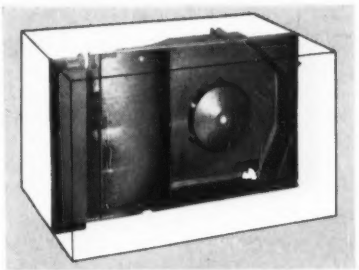

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SOVFOTO

Russia's chemical industry will be pushed hard in new seven-year plan—but won't overtake ours.

Decisive Seven Years for Soviet Chemicals

Technical aid for Russia's ailing chemical industry is one of Deputy Premier Anastas Mikoyan's top worries as he prepares for his "unofficial" visit to the U.S. this month. In his talks with U.S. officials, the Soviet's top trade official (and Premier Khrushchev's right-hand man) is expected to press for sales of U.S. equipment and know-how to Russia.

Also due for discussion: easing of East-West trade restrictions. Russia must score on both counts if it is to fulfill its new seven-year industrial development plan that begins this week.

To start the plan rolling, the U.S.S.R.'s rubber-stamp parliament, the Supreme Soviet, last week "approved" a 1959 budget of some $177 billion (at the official four-to-one exchange rate). Scientific research outlays will rise to $6.8 billion. And industrial expansion will take $121 billion, including the first installment of the $25-billion, seven-year chemical industry expansion program—a major offensive of Premier Khrushchev's "economic war" on the West.

Help Wanted: But as the funds start to flow into the Russian industrial machine, and the seven-year plan grinds into motion, one fact is becoming increasingly clear: Russia's chemical industry—the key element in the plan—is in serious trouble. To meet the over-all industrial target—an 80% boost in output—the chemical industry must expand by 300%. Without help from the West, Russia's chemical industry will very likely fall short of its goals.

And if—with the necessary help—it does fulfill its goals, Russia will still not "catch up with the U.S." Nor will Russian chemicals pose a serious threat to U.S. producers for a long time to come.

These conclusions stem from an analysis of Russia's production record, from its own plans and from first-hand observations by *CW*'s Moscow news bureau (*see Viewpoint, p. 4*).

Measuring Up: On the surface, it would appear that Russia is fast overtaking the U.S. and will easily fulfill its pledge to become the world's No. 1 industrial power. Since 1951, Soviet industrial output has been leaping ahead at the rate of 12%/year according to U.S.S.R. statistics—9-10%, according to the estimates of Western scholars. U.S. output, in comparison, has grown at the annual rate of only 3%. Still, because of a much larger base, the volume of U.S. industrial output still exceeds the Soviet's by two- or threefold. In absolute volume terms, the gap between U.S. and Russian output has been steadily widening—except in recession years—and will continue to widen for several more years.

Of course, if Russia can maintain its present growth rate, it will eventually overtake the U.S.—although certainly not by '65, the end of the new seven-year plan.

But, as its industrial base broadens, Russia's growth rate will slow down. This is already happening. According to the Russians' own figures, the industrial growth rate dropped to 10% in '57, is expected to average 8.8% through the next seven years.

Veil over Chemicals: Russia has not stated its chemical expansion goals in absolute terms, as it did for most other industry categories. All proclamations talk only of percentage increases. This, and the disproportionate rate of projected chemical growth—compared with over-all goals—indicates that Russia's chemical industry seriously lags the rest of its economy.

There is probably no reliable way to estimate the present size of the Soviet chemical industry. The few production figures that have been re-

leased show Russian chemical production to be far behind U.S. output. Soviet soda ash production totaled 1.8 million tons in '57, compared with U.S. production of 5 million tons. Sulfuric acid output totaled some 5.1 million tons, compared with 16.2 million in the U.S. And in '56, the last year for which Soviet figures are available on caustic soda, Russia turned out about 700,000 tons and the U.S. produced 4.2 million tons while running at less than capacity.

One index of Soviet chemical growth is the historical lag in chemical production between Russia and the U.S.—the time between the year that the U.S. achieved a certain production level for a particular product and the year the Russians reached it. Utilizing the few available chemical output figures, this method shows that Russia has been losing ground to the U.S.

Losing Ground on Soda: In '55, U.S.S.R. soda ash output, for example, was 24 years behind the U.S. level. Between 1913 and '55, the lag had increased by two years. Russia was behind 24 years in caustic output in '55, seven years greater than the lag in 1913. Comparisons of synthetic dye production point up the rapid growth of that industry in the U.S. In '13, Russia was only two years behind the U.S. in synthetic dye production; in '55, it was 12 years behind.

In terms of per-capita output, the contrast between U.S. and U.S.S.R. growth is even greater. The lag in caustic output increased from 19 to 35 years between '13 and '55; in soda ash, from 27 to 45 years; in synthetic dyes, Russia lost a 14-year lead, was 22 years behind the U.S. in '55.

But these figures give no real comparison of the U.S. and Russian chemical industries as a whole. While caustic soda and sulfuric acid are regarded as guides to over-all chemical and industrial activity in the U.S., they are practically meaningless as guides to over-all Russian chemical output. This is because the Soviet industry is still so much less diversified than ours. U.S. end-use patterns simply do not hold for the U.S.S.R.

Major Gains Ahead: Nevertheless it is clear that the Russians are planning vast chemical expansions. During the next seven years, Russia hopes to build 140 large-scale chemical plants, and plans to modernize—largely via automation—130 more. To do this, the plan calls for $25 billion in capital expenditures. This means average annual outlays of $3.6 billion. The latest McGraw-Hill survey of capital expenditure plans shows that the U.S. chemical industry plans to spend an average of only $1.4 billion/year between '56 and '60. And much of the $17 billion slated for the Russian petroleum industry will go into petrochemical production.

To help implement this chemical expansion, Russia plans to build 14 new equipment-producing plants, modernize 42 others. Total outlay: $875-925 million.

About half of all the chemical allocations will go for plants to produce alcohol, plastics, synthetic fibers and synthetic rubber.

Trimming Their Sails: But already there are indications that Russia faces trouble in meeting its ambitious goals. Last spring, in his famous "chemical speech," Khrushchev declared that the next seven years would see Soviet plastics and resins output register an eight-fold increase. This would mean that by '65 Russia would lead the U.S. in this category. Soviet production would total an estimated 9 billion lbs., 39 lbs. per capita, compared with projected U.S. output of 7.3 billion lbs., 37 lbs. per capita. But when the seven-year figures were published in November, the '65 goal had been trimmed to a 670% increase—equivalent to 7.4 billion lbs., 32 lbs. per capita. Synthetic fiber output goals were also trimmed—from a 460% rise to a 400% rise.

Stumbling Blocks: To reach the seven-year chemical goals, Russia must surmount several major obstacles.

- Despite some glowing reports by U.S. scientists returning from Russia, the Soviet chemical industry is not well prepared to handle the strong shift in emphasis towards synthetic fibers and plastics. Until recently, polymer research has been slighted, and the supply of skilled technicians is so low that the Russians are talking of recruiting them from other industries.

The Soviet educational setup for chemical specialists recently came under fire, when it was disclosed that only four out of nine chemical technology institutes are equipped to prepare specialists for work in the plastics industry. And there is a shortage of new Soviet literature on the chemical industry.

Russia has been getting a lot of technical help from her satellites, especially from Czechoslovakia and East Germany. But to meet its goals, it will need more help from the West.

- The Russians are also relying on the West to ease their equipment shortage. Greater automation is a "must"—a Soviet worker's productivity is about half an American's. Moreover, other industrial sectors—steel armature production, for example—have lagged, and this in turn has held up chemical plant building.
- Management problems also beset Soviet chemical growth. Last spring, Khrushchev began cutting through the bureaucratic tangle, replaced the Ministry for the Chemical Industry with a State Committee for Chemical Industries. The shift in top officials was extensive. Decentralization and concentration of power in fewer hands may smooth operations, but problems remain, and the strains will be magnified under the pressure of the seven-year program.

Illegal 'Pushing': Plant managers, for instance, have had to devise their own extra-legal ways to meet their quotas. They have been known to hoard scarce materials, while other plants stand idle for lack of them. The term "pushing" connotes a variety of methods of removing red tape from the paths of plant managers.

To unload surplus inventory or production, a harried plant manager may send out a "salesman" to peddle it to plants not scheduled for such materials. If a manager is over his monthly quota by, say, 200%, he may juggle the books to report only 100%—thus qualifying for a bonus and setting up a surplus for lean months.

He is forced into these activities to meet the demands placed on him, but the Soviet plant manager must nevertheless worry about the very real possibility that a worker or an ambitious fellow plant manager will report him.

No Export Flood: Despite all these

problems, Russia's chemical industry will continue growing, even if it fails to reach its seven-year goals.

But this doesn't necessarily mean that Russian chemicals will be flooding the world markets. Most Soviet chemical output will be needed internally, to supply other industries and to satisfy mounting consumer demands. Plastics, for example, will be used in home construction to help beat the housing shortage while saving nonferrous metals. The Soviets are talking about plastic ball bearings, and plastic gear wheels. And synthetic fibers are in demand, both to increase the supply and to reduce the exorbitant prices of Russian clothing.

Most likely, Soviet chemical exports will follow their present pattern—large quantities of particular chemicals may be pushed into the market for limited periods, until they can be used domestically. Soviet chemical export lists will shift by product and quantity in phase with construction of chemical-consuming plants in Russia. Chemicals on the market one year may disappear the next, which will discourage purchasing agents in non-Communist countries from turning completely away from their regular suppliers.

Wage-Cost Inflation Due: And the pressure of rising costs may tend to boost some Russian chemical prices to levels of U.S. prices. Transport and fuel costs, for example, take a large share of total chemical production costs. And a greater supply of consumer goods may lead to demands for higher wages.

The financial burden on Russia's chemical industry may also grow heavier from the need to plough earnings back into the investment program.

Of course, Soviet prices are not always linked directly to costs. Where political or broad economic aims are involved, low (subsidized) prices can be expected.

For now, the Soviet Union's new seven-year plan opens a potential market for U.S. equipment and technology—if the U.S. government's policy permits. For the longer haul, Russia's industrial buildup—in which chemicals will play a vital role—will enhance that country's capacity for "cold" or "hot" war. But industrial prosperity, some Russian experts point out, may spike the idealogical zeal for a "rule or ruin" policy.

More Year-end Acquisitions

A flurry of acquisitions enlivens the CPI scene as '58 record books are closed out this week.

Hercules Powder will diversify through acquisition of Young Development Laboratories (Rocky Hill, N.J.) — manufacturer of filament-wound, glass-fiber-reinforced plastic materials.

Hercules and Young have been working cooperatively for nearly 10 years on rocket motors for solid propellents, in which Young's products are being used because of their ability to withstand heat and pressure. But Hercules says its interest in Young's product line is not confined to rocket engines. It plans to step up development work on such applications as structural products in aircraft, autos, boats, processing equipment, containers, furniture and buildings.

Aluminum Cans Abroad: Aluminium Ltd., Canadian aluminum producer, and Fabrique D'Emballages Metalliques S.A. (Fribourg, Switzerland), leading maker of aluminum cans in Europe, will merge interests in the aluminum can market overseas.

Aluminium will acquire—for cash, plus some aluminum metal—a one-third interest in FEM after the Swiss firm boosts its capital 50%. FEM now has production units in Switzerland, France and Holland.

In Wildwood, N.J., Haynie Products Inc., researcher and marketer of crude oil products, will integrate its business by acquiring Menhaden Fish Products, Inc. (Baltimore, Md.), maker of alkyd resins and processed fish oils.

Terms of the transaction weren't revealed, though Haynie officials say all oil products will be marketed under the Haynie label.

Specialty Makers Merged: Two makers of hair preparations are being merged. Colgate-Palmolive will acquire Wildroot (*CW Business Newsletter, Dec. 27, '58*) and B. T. Babbitt, Inc. (New York), is buying Charles Antell, Inc. (Baltimore), for an undisclosed amount of cash.

Babbitt President Marshall Lachner called the acquisition "another step in Babbitt's long-range policy of diversification," says Babbitt hopes to post sales of $60-70 million in the next five years.

In the processing equipment industry, Desomatic Products, Inc. (Falls Church, Va.), has acquired all the assets of Anders Lykens Corp. (Philadelphia). Both firms are makers of low- and high-pressure driers.

And Eaton Manufacturing Co. (Cleveland) will purchase Cleveland Worm & Gear Co. Terms call for a total of 81,670 shares of Eaton stock to be exchanged on a share-for-share basis for all Worm & Gear shares.

Gearing for Disaster

Chemical companies in the Niagara Falls, N.Y., area last week took the lead in organizing a mutual-aid industrial council to cope with any broad-scale emergencies.

The council, in the works for several months, was made official last week at ceremonies in the Niagara Hotel, is called the Niagara Industrial Emergency Council. Cedric Vincent-Daviss, Du Pont's community relations representative, was elected president; membership includes 23 of the largest plants in the community, is open to all Niagara plants and utilities employing 150 or more workers.

Major aims of the organization, as outlined by its constitution:

- To establish a coordinated plan for members' handling of industrial emergencies, including cooperation with local and federal governments.
- To encourage self-sufficiency in planning to handle emergencies and to appraise the adequacy of materials and manpower available.
- To develop a sound public relations program for an emergency.

The council will work closely with civilian defense officials, the disaster committee of the American Red Cross, state and local police, the sheriff's department, fire department and hospitals.

Present members include Du Pont, Kimberly-Clark, Hooker Chemical, Niagara Mohawk Power, Stauffer Chemical, Bell Aircraft, Union Carbide, Olin Mathieson Chemical, International Graphite and Electrode, National Lead, International Minerals & Chemical, Goodyear Tire & Rubber, B. F. Goodrich Chemical, General Abrasive, Carborundum, Great Lakes Carbon, and Vanadium Corp.

New Policies on Purity

Continuing studies of chemical plants' water pollution problems and the development of automatic monitoring stations—all of which will likely lead to new pollution-control policies in many parts of the country—are on the '59 agenda for the Ohio River Valley Water Sanitation Commission (ORSANCO).

Specific topics that will come up at this eight-state agency's next quarterly meeting — to be held Feb. 6 in the commission's headquarters at Cincinnati—will include mine acid control, sewage treatment in the Monongahela River valley, oil pollution control and taste and odor control.

But throughout the year, ORSANCO—through its engineering staff and through its industry advisory committees—will be working on pollution-control proposals that would affect chemical process companies in various ways.

ORSANCO's 10th annual report, out last week, notes that the chemical industry advisory committee—currently headed by Columbia-Southern's Nelson Ehlers—is continuing its study of developments concerning synthetic detergents. This committee also is engaged in studies of the relation of chemical plant operations to such river water constituents as iron, manganese and dissolved solvents, and to hardness, temperature and acidity of the water.

For chemical companies in the Ohio River basin, probably the single most important action by ORSANCO during the past year was the commission's adoption of a precedent-setting regulation on chloride control (*CW Business Newsletter, Sept. 20, '58*).

Battle on Imports

There were fighting words from Monsanto last week. As it rolled down the price of caffeine 16%, the St. Louis company rolled up its sleeves for a battle with importers of foreign-made caffeine.

Monsanto—leading U. S. producer of this ingredient of pharmaceuticals and soft drinks—now is offering high-purity caffeine in 100-lb. lots at $2.10/lb., a 40¢ reduction (*CW Market Newsletter, Dec. 27, '58*).

Repeated tariff reductions on imported caffeine have virtually halved

COMPANIES

Latex Industries, Inc. (Beaver Falls, N.Y.), will stop pilot-plant operations on Airlex, a plastic insoling material, because of difficulties in designing machinery for large-scale production. The company will concentrate on developing a cellulose-neoprene combination with similar properties.

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Superior Oil Co. of California says it has discovered high-grade potash deposits in San Juan County, Utah. The company has secured rights on 10,000 acres of federal prospect permits and is now drilling test holes. Superior reports it needs considerably more information on the extent of the deposits before it will start further development work.

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Corn Products Co. directors last week voted to boost the company's quarterly dividend to 50¢/share, an increase of 5¢ over the previous payout. President William Brady emphasized that the new dividend stems from sharply increased earnings following Corn Products' merger with Best Foods Co. earlier this year.

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A. O. Smith Corp. (Milwaukee, Wis.) is forming a new reinforced-plastics division to manufacture plastic pipe and other reinforced-plastic products having applications in the oil, chemical, gas and liquid petroleum gas industries. Heading the new division is James Donnelly, Sr., former assistant general manager of the company's Permaglas Division.

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Universal Oil Products Co. (Des Plaines, Ill.) stock—held by Guaranty Trust Co. (New York)—probably will be sold within a month. Final hearing on a plan for the sale is to be held Jan. 5 in a New York state court.

EXPANSION

Aluminum: Initial operations at Aluminum Co. of America's new Point Comfort, Tex., alumina refining plant will get under way Feb. 1. Although parts of the plant are still under construction, Works Manager A. B. Kaltwasser reports sufficient equipment has been installed to begin "shakedown" operations.

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Glass: Laurens Glass Works, Inc. (Laurens, S. C.), will build a plant in Henderson, N. C., to manufacture soft-drink bottles and glass containers for processed foods and household chemicals. The new unit, which will cost "several million dollars," will employ 150-200 workers.

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Lime: Flintkote Co. plans to build a $1-million lime plant in Salt Lake City, Utah. Flintkote Chairman I. J. Harvey says the decision is based on "increasing demand" developing in the area.

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Polymer Emulsions: Badger Manufacturing Co. (Cambridge, Mass.) this week expects to complete work on a new polymer emulsions plant in Lemont, Ill. The plant is being built for UBS Chemical Corp., will be that company's second emulsion unit. First was completed in '55 at UBS's Cambridge headquarters.

•

Petroleum Products: Humble Oil & Refining Co. has received bids for construction of a $77-million recycling plant near Kingsville, Tex.

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CHEMETRON

Monsanto's sales of this product over the past few years, according to Vice-President Charles Sommer. He noted that Monsanto closed a caffeine plant at Norfolk, Va., in '56. From '54 to '58, the tariff on caffeine has been sliced from 60¢ to 51¢ lb., and imports have climbed from 260,196 lbs. in '54 to an estimated 950,000 lbs. during '58. Total U. S. demand is about 2.3 million lbs./year.

CPI Push in Mideast

Mideastern nations this week are readying for an important round of chemical process expansions in the year ahead.

In Iran, British, French and Italian interests are combining to build a $30-million, 100-tons/day nitrogen fertilizer plant. The Franco-British industrial combine, "ENSA," will build the new unit, and the giant Italian chemical firm of Montecatini will furnish the process and serve as industrial advisor to the Iranian government.

A 140-mile pipeline will carry natural gas from the Gasharan oil fields to Shiraz, site of the plant. Plans call for the pipeline to supply natural gas also to the city of Shiraz for commercial use.

In Iraq, the Iraq Development Board is pushing three chemical projects — a pulp and paper plant, an ammonium sulfate plant and a rayon production unit.

The pulp and paper mill is designed to turn out 25,000-30,000 tons/year of paper products, will cost about $8.5 million. The ammonium sulfate unit, to be built at Basra, will cost about $22.4 million, will produce 250,000 tons/year of ammonium sulfate and 21,000 tons/year of sulfuric acid. The proposed $9-million rayon plant, also at Basra, will turn out 2,500 tons/year of synthetic fibers, 9.5 million meters of rayon cloth and 12.5 million meters of spun-rayon cloth.

Contracts for all three projects will be awarded early in '59, according to official Iraqi sources.

In Cairo last week, the Egyptian and Russian governments agreed on a plan for Soviet aid on various industrial, utility and transport projects in Egypt. These projects include a zinc mill, manganese mines, an iron ore crystallizing plant, and an electric power station.

Washington
Newsletter

CHEMICAL WEEK
January 3, 1959

New tax incentives for foreign investors will be urged by the special House Ways & Means Subcommittee studying such measures in a report due by mid-January.

The House group is likely to recommend new legislation deferring U.S. taxes on income earned overseas by subsidiaries of U.S. companies until earnings are distributed by domestic parent firms in the form of dividends. Earnings are now taxed as they are made.

This move is supported by several congressmen and industry spokesmen as an incentive to U.S. companies to reinvest their foreign earnings overseas.

The subcommittee also is expected to recommend a lifting of some of the limits the U.S. Treasury now puts on tax credits—the policy of crediting U.S. firms for taxes paid overseas, as if they had been paid to the U.S. government.

The House group's report, however, will not urge either absolute tax reductions on foreign operations, nor support the Administration's proposal to allow the so-called "sparing" of foreign government taxes—that is, U.S. forgiveness of collections also forgiven by the local government overseas.

•

Experts on nuclear explosives and oil shale will huddle in Dallas Jan. 6 with chemical and oil industry representatives. The object: to trade information, and to find out whether there's enough serious industry interest in nuclear retorting of shale oil to warrant a test explosion. If the interest is there, the Bureau of Mines will start looking for a place to conduct the test—probably in two years or so. Experts for the Atomic Energy Commission are convinced that an atomic blast at least will crush the shale and make it producible by conventional fire drive methods. And some of the oil should be retorted in place by heat from the bomb.

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A new effort to coordinate federal research has been approved by the White House. At the suggestion of his science advisory committee, President Eisenhower is creating a federal council for science and technology.

The new group will include planners and managers of research and development programs from virtually all federal agencies. James Killian, Eisenhower's chief science advisor, will be chairman.

This kills the idea of a cabinet-level Dept. of Sciences—at least for the time being. The new council will operate at a policy level just below cabinet status, reporting directly to the President. If it doesn't succeed in establishing firmer direction, better coordination among the government's R&D programs, the cabinet idea will be revived and pushed harder.

Washington Newsletter

(Continued)

An early council job: critical study of federal grants and contracts to private business and higher educational institutions. The idea is not to kill the system, but to look for better returns. For one thing, the council will propose contract commitments of longer duration than the usual one year—in order to permit sensible planning and more efficient expenditure of funds.

Coordination of government-sponsored medical research was called for last week by Francis Boyer, chairman of Smith Kline and French Laboratories, at the Washington, D.C., meeting of the American Assn. for the Advancement of Science.

Participating with Boyer in an AAAS medical research symposium was Stanhope Bayne-Jones, former dean of Yale's school of medicine, and chairman of the recently disbanded advisory committee known as the consultants on Medical Research and Education to the Secretary of the Dept. of Health, Education & Welfare. Boyer wants a similar body—to counsel Congress and the Surgeon General, as well—set up on a permanent basis.

•

A fight over oil imports in Congress will be delayed until spring. The Administration has continued the present voluntary program for 60 days. Only after a new plan is proposed will congressmen take up the cudgels. There will be efforts by domestic producer groups to get mandatory quotas written into law.

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Another saline-water conversion plant will be built—this one using the direct freeze process. The Interior Dept.'s office of Saline Water awarded a $150,000 contract to Carrier Corp. to build a 15,000-gal./day pilot plant at Syracuse, N. Y.

•

Government stockpile managers threw a pre-Christmas scare into metal-mineral industries, then spent the holidays reassuring the trade. The scare came when the Office of Defense and Civilian Mobilization's intragency stockpile committee reported a $1.8-billion surplus in strategic metal-mineral stocks on hand as of last June 30, largely caused by the gradual resetting of goals from five-year to three-year levels.

The report went on to say, however, that federal law and Administration policy is against the unloading of surplus commodities that might cause market disruptions.

Agency staffers admit that the Administration's current and frantic hunt for new sources of revenue may bring pressure on the stockpile committee to consider ways of disposing of some of its surplus held in inventory.

But they say any disposal is "a long way off," would require at least six months' notice to industry, and would not apply to "sensitive" cases in which disposal would disturb shaky domestic markets. Still, the possibility of an eventual disposal of at least some metal-miner stocks has been raised officially for the first time.

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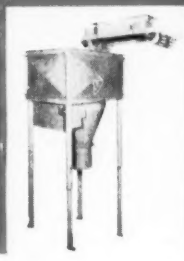

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Redox Resins Scent Commercial Rewards

In Yale University's Sterling Chemistry Laboratory this week, a new variety of electron-exchange polymers is evolving under the mentorship of chemistry professor Harold Cassidy. These compounds, made by polymerizing tetrachloroquinone with glycol, may break the cost barrier that has kept these unusual polymers from broad industrial acceptance.

The polymers, which Cassidy calls redox resins — in analogy to ion-exchange resins — may be linear, cross-linked, homo- or copolymeric, but they all feature the ability to undergo oxidation and reduction reactions reversibly. Cassidy has been working on these compounds for more than a decade, but he has concentrated on synthesis rather than application, and applications are only now starting to emerge.

Chemical Process Co.'s (Redwood, Calif.) Duolite S-10 is currently the only commercially available redox resin. It is an anion-exchange resin coupled with copper and is used to remove dissolved oxygen from water in water-treatment plants.

Eastman Kodak (Rochester, N.Y.) has been investigating redox polymers (primarily polyvinyl hydroquinone and its copolymers) as a reducing agent for stains in certain color photography systems. Kodak, however, doesn't produce or market the raw materials or finished electron exchangers.

Cool Reception: Ion-exchange resin makers haven't been pushing redox resins simply because, at their present prices, the market doesn't appear large. Dow and Monsanto, for example, say they are interested but are doing no research in the field. Rohm & Haas reports it has no plans to produce redox polymers now but does use them captively for purposes it won't disclose. Ionics Inc. (Cambridge, Mass.) is not actively researching redox resins now, but has in the past. Norman Rosenberg, Ionic's research director, sums the situation up: "We're not optimistic about the market outlook for such resins."

But there's still some commercial interest. Recently, Britain's National Chemical Laboratory (Teddington, Middlesex) polymerized tetrachloroquinone with sodium cellulose (and also with sodium polyvinyl alcohol) to make redox polymers, which will reportedly remove oxygen from boiler-water and which double either as inhibitors or as catalysts in the polymerization of vinyl monomers.

Academic Interest: Despite the British interest, the bulk of current redox resin research is academic in nature.

Cassidy's redox resin work has been mainly with hydroquinone and its derivatives, tetrachlorohydroquinone, toluhydroquinone, xylohydroquinone, naphthaquinone and anthraquinone. He has also worked with catechols.

Yale's Cassidy: His resins are bucking the cost barrier.

Several routes are available to the polymers; among them, polymerization of vinyl hydroquinone dibenzoate or diacetate (U.S. Patent No. 2,700,029); polymerizing a hydroquinone with formaldehyde. The work has been sponsored by Research Corp. (New York) and the U.S. Public Health Service.

At Brooklyn Polytechnic Institute, Harry Gregor, chemistry professor, is researching pyrogallol redox resins. He has found that if the resin is made with an open porous structure it is a good reducing agent. One of the resin's advantages, Gregor says: it may be easily regenerated, used over again. Costs are about the same as anionic-exchange resins: $60 to $80/cu.ft.

Because redox resins are polymeric and nonvolatile, Cassidy speculates, they may be useful as antioxidants in oils, fats, coatings and films, possibly even in pharmaceuticals. But the commercial use will depend on more applications research. Lower-priced resins may stimulate this.

Speeding the Word

To make sure their research results on new products are published quickly and in detail, some companies find the best approach is via advertisements in selected journals. This week, a record for the size of such ads appears to have been set by the Pfizer Laboratories, division of Chas. Pfizer & Co., Inc. A 24-page scientific report in the current *Journal of the American Medical Assn.* (Vol. 168, No. 12) —the largest continuous-page ad ever carried by the *Journal*—is bringing physicians full information on the use and contraindications of Pfizer's new oral diabetes drug, Diabinese.

Besides complete clinical and dosage data (originally reported at a recent New York Academy of Sciences symposium on diabetes), the report covers precautions that must be observed with the drug. For example, Diabinese (generic name chlorpropamide) is not an insulin substitute and must not be used alone in cases of juvenile diabetes or in treating certain types of diabetes where blood sugar levels vary sharply.

Pfizer Labs' general manager, J. J. Van Gasse, points out: "Prior to inserting the report in *JAMA*, we announced the report's availability in numerous other ethical journals and our professional service representatives carefully reviewed the paper's contents with physicians in personal calls at their offices. Supplemental information has been sent by personal communication from our medical department to many interested physicians."

However, at least one CPI company is first publishing entirely original research findings in advertisements. Varian Associates (Palo Alto, Calif.) claims this distinction. In a re-

cent issue of the *Journal of the American Chemical Society*, the firm published work on electron paramagnetic resonance applications in biochemical reactions. Other ads concern nuclear magnetic resonance. All pertain to chemical research.

Varian's purpose, like Pfizer's, is to publish complete information as quickly as possible. While the technique may have limitations (e.g., in capturing reader interest), it's shaping up as a trend to watch.

EXPANSION

• Brookhaven National Laboratories (Upton, N.Y.) dedicated its new, $6.5-million medical research center last week. The center includes a tank-type reactor, a 48-bed hospital and chemical laboratories. Main research emphasis will be on cancer, but chemical labs will also probe antiradiation-sickness drugs and the effects of radiation on the human metabolism.

PRODUCTS

Calcined Alumina: A pure white, ground calcined alumina of low iron content (0.04% ferric oxide) is available from Reynolds Metals Co. (Richmond, Va.). Use: abrasive for polishing surfaces.

•

Epoxy Resin: Dow Chemical Co. (Midland, Mich.) is now offering a new epoxy resin, called X-2638.3, reportedly useful in applications requiring high-temperature resistance and heat stability. It is based on epichlorohydrin and novolac.

•

Rocket Fuel: Atomized ferrosilicon containing 75% silicon is now available from Westco Chemicals, Inc. (North Hollywood, Calif.). It's for use in oxidation reactions, rocket fuel.

•

Biochemical Entries: General Mills, Inc., Research Laboratories (Minneapolis, Minn.) now offers L-histidine monohydrochloride N.F. and L-histidine free base. They're suggested for use in peptide synthesis and other biochemical research.

•

X-ray Checker: A new compound for X-ray examination of the gall bladder and biliary ducts is offered by E. Fougera & Co., Inc. (Hicksville, L.I., New York). Called Orabilex, the compound is 3(3-butyrylamino-2,4, 6-triiodophenyl)-2-ethyl sodium acrylate. It is taken orally, features low incidence of side effects, is said to facilitate X-ray diagnosis.

LITERATURE

• A new 24-page free booklet, "Nuclear Fuels: Key to Reactor Performance," is available from Sylvania-Corning Nuclear Corp. (Bayside, N.Y.). It is divided into three sections: aspects of reactor design; reactor fuels, including solid and liquid types, and design of fuel elements; and a summary of typical reactors and their fuels.

• The physical and chemical properties as well as applications of succinic anhydride and its acid are covered in a brochure (Technical Bulletin I-11) published by National Aniline Division of Allied Chemical Co. It is available free from National Aniline Division's publicity department (40 Rector St., New York 6, N.Y.).

• "Soviet Research in Fused Salts — 1956" is a collection of 42 papers translated from Russian, having originally appeared in several Soviet scientific journals. Price: $40. The tables of contents for this collection as well as an older, more complete collection of 125 papers on the same subject (1949-55) are available free from the publisher, Consultants Bureau Inc. (227 West 17th St., New York 11, N.Y.).

APPARATUS

Gas Analyzer: Fisher Scientific Co. (Pittsburgh) has developed a completely automatic "Gas Partitioner," which takes a 1-ml. gas sample, separates and measures each constituent. Analyzing a mixture containing hydrogen, oxygen, nitrogen, carbon monoxide, carbon dioxide and ethylene takes only 10 minutes; other hydrocarbons run the time up to 20 minutes (compared with an hour or more for an Orsat analysis). The equipment is actually a gas chromatographer using two columns of different lengths and with different packings, connected in series. The gases emerging from them are detected and measured by a dual thermal conductivity cell. Helium is used as a carrier gas.

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British auto-specialties maker Michael Holt . . .

. . . thinks foreign specialties can sell well here

. . . finds U.S. marketing of auto products complex

British Specialty Maker's Reverse

U.S. makers of automotive specialties seeking to capture more European business might well keep a close watch on their markets here at home. England's—and probably Europe's—largest maker of automotive specialties is gearing up its sales force for a new drive on U.S. markets. Douglas Holt Ltd. (Surrey, England) will, if present plans work out, become a familiar name to buyers of auto specialties here in the U.S.

During a recent visit to the U.S., Michael Holt, director of the British company, gave *CW* his impressions of U.S. auto-specialties marketing and how it compares with Britain's.

Holt is convinced that opportunities in the U.S. warrant his company's risking a strong sales effort, but he names tariffs and freight costs as primary hurdles. "It must be remembered," he points out, "that many automotive specialties have a relatively low retail price, and European-made products have a long way to come before they even enter your market."

Tariffs, Holt says, present a two-fold problem to the beginner at exporting to the U.S.: first, tariffs mean added cost; second, it takes some time for a reliable tariff structure to be fixed. Customs officers have a particular problem with specialties products because they consist of a mixture of chemical ingredients, each of which carries a different tariff.

Sizable Target: Once tariff problems are solved, Holt says, there will be big opportunities for the foreign competitors. "The U.S. market is, of course, very much bigger than our own. In fact, in automotive specialties, it's about 10 times as big." That's all to the good, says Holt. If his company captures only a small part of the over-all U.S. potential sales market, it will make a sizable export market and "a very nice business, as far as we're concerned."

Holt continues: "To stand any chance of exporting to the U.S., a specialties manufacturer must have novelty products that are a little different in form or presentation from those sold by domestic producers. The products should be relatively small and light and carry a fairly high retail value."

Complex Market: Contrasting U.S. and British markets for automotive specialties, Holt says, "One of the striking things about the U.S. market is its complexity. In England, the motor trade has the most efficient distributing system, except for that of a few chain stores. It consists almost entirely of sales through wholesalers to dealers, to the public. It's unusual to find automotive specialties in British hardware or drugstores; and the motor trade frowns upon manufacturers that supply motor accessories outside their recognized distributive channels."

"It seems to me," Holt says, "that in the States you have a much more complex distributing system. For instance, you have many more private-brand lines put out by oil companies, tire companies and car manufacturers—sold through their own service stations or garage outlets. In Britain, the relationship between the oil companies and their service stations is somewhat different. Only in recent years have oil companies started to open their own stations."

Simplified Supply: Holt feels that British specialties makers have a much simpler supply setup. "Due to our very much smaller area, almost any dealer in any part of the country can get our products within 24 hours. He can get them himself or via his local wholesaler, who is probably within a few miles and has a daily delivery service."

Normally, it does not take more than a week for supplies to reach any of Holt's wholesalers, even those the farthest from its plant. Holt contrasts this with the system in the U.S.: "If one is limited to a single agent, say in New York, the problem of getting goods distributed across the U.S. is a very much bigger one." That is why Holt is currently looking for distributors in the Middlewest, Western and Southern states.

Modern Manufacture: Asked what differences he sees in British and U.S. production methods, Holt claims the British are fully up-to-date on both formulas and manufacturing techniques. He was impressed by large batch methods typical of larger U.S. specialties makers.

Comparing the two nations' marketing of specialties, Holt doesn't see

CW PHOTO—SON APPELBE

. . . has doubts about some aerosol products

. . . likes the help given by U.S. technical service

. . . rates British production techniques with U.S.'s.

English—Foray into U.S. Markets

much difference in the types of products demanded. And he thinks the so-called "miracle ingredient" is as necessary a factor in making sales in Britain as it is here.

Holt did point up two differences between selling in the United Kingdom and in the U.S. For one, although aerosols are catching on rapidly in England, "the English housewife or motorist is not swung over by the gimmick value of the aerosol if it costs very much more than conventional packages for the same product." As a result, his company has not tried many of the pressure packages for its line, as many U.S. producers have.

Also, Holt products are not yet packaged for self-service stores, a thriving outlet for many U.S. specialties. Although these stores are definitely making a niche for themselves in Britain, Holt doesn't feel that auto specialties are particularly suited to this type of selling, either in Britain or elsewhere.

Full Line: Holt's company makes a very wide range of products, covering virtually every requirement of the modern automobile. Included are radiator sealers, water pump lubricants, corrosion inhibitors, cooling system products and a line of autobody filler products. These are turned out in the main plant at New Addington and at a plant in France.

The majority of the company's distribution is to the motor trade, but some similar products, which have household applications, are sold through hardware stores. In addition, Holt supplies certain specialties to industry.

U.S. specialties makers who feel that American merchandising methods will prove more than a match for a foreigner would get a rude shock from a few minutes' conversation with Holt. He knows the U.S. and its marketing techniques, is versed in technology and he's out to take as much business as he can from U.S. specialties makers.

PRODUCTS

Deleafer Defeater: Alcoa Research Laboratories (Pittsburgh) has developed an additive said to eliminate the deleafing of aluminum in alkyd and high-acid varnish vehicles. The new additive, clear amber liquid Alcoa Stabilizer No. 5, makes possible ready mixed formulations with acid values up to 28. It's used at the approximate proportion of 2 oz./1 gal. of paint.

•

General Sealer: Armstrong Cork (Lancaster, Pa.) is offering a new sealer for use in automobile windshield and back-light installations and as a general industrial sealer. The material, called Armstrong P-606 Sealer, has a volume shrinkage of about 2%, may be extruded as received, without thinning. A gallon covers approximately 300 linear ft, with a ¼ x ¼-in. bead. Armstrong says it may be used in temperatures from —40 to 160 F, and that it is suitable for use in caulking gun or pressure pump systems.

•

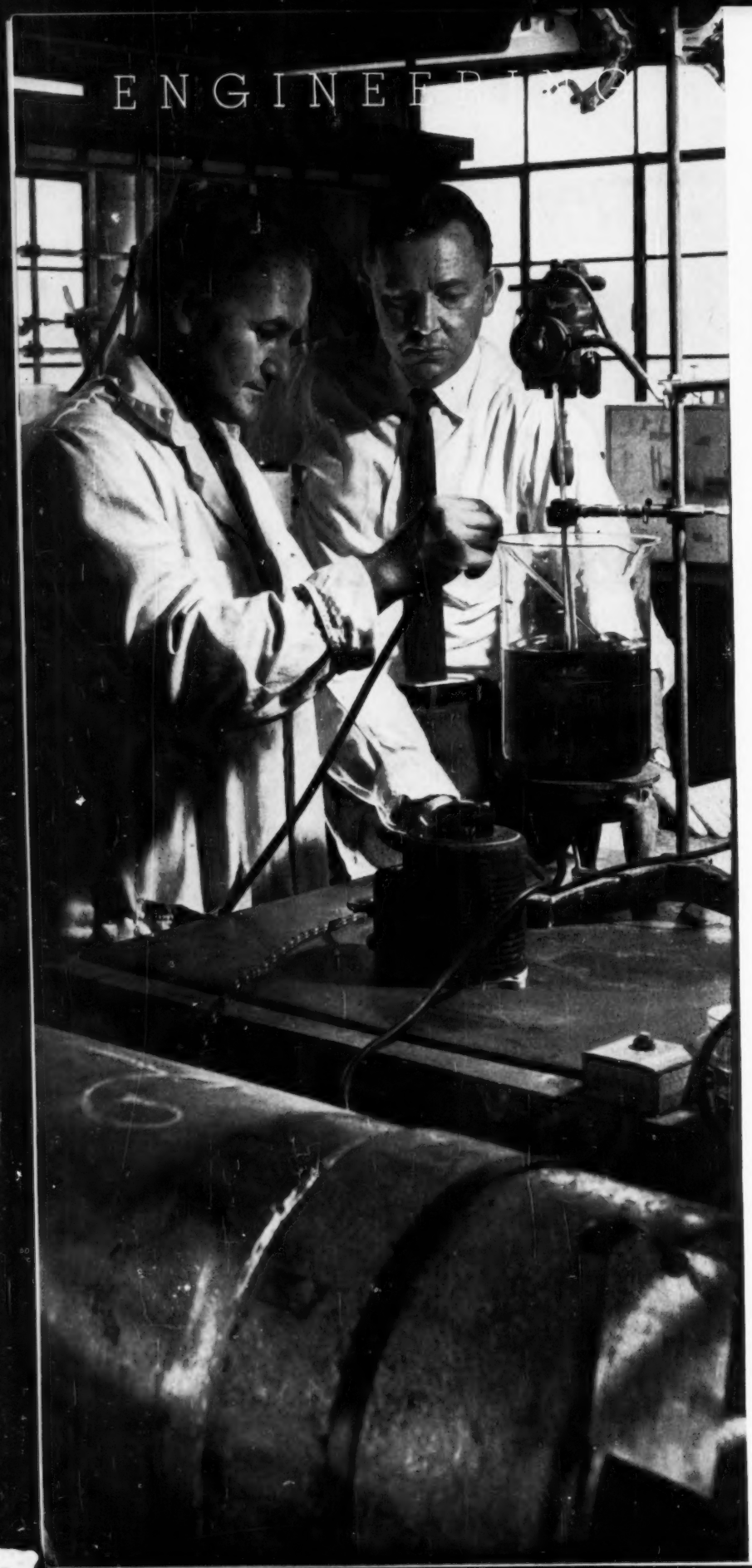
New Green from White: The White King Division of the Los Angeles Soap Co. has just introduced an all-purpose industrial cleaner called White King Crystal Green Cleaner. White King says its new product is especially designed for washing walls, floors, painted and greasy surfaces. It's available now in 25-, 100- and 275-lb. containers.

•

Navy Vat Dye: Calcoloid Navy Blue 2GC Double Paste, a vat dye that is said to remain stable at dyeing temperatures as high as 250 F, is now available from American Cyanamid Co. The new paste produces navy blue shades with a greenish cast and works readily in all types of piecegoods dyeing. Cyanamid says the new dye doesn't color a drycleaning bath pink and doesn't change its tone in a solution containing 0.3% available chlorine.

•

Compact Carton Closer: Alford Package Machines (Ridgefield Park, N.J.) is offering what it describes as the lowest-priced carton-end gluer now available for moderate production needs. The unit, called the Minisealer, occupies only 4 sq. ft. of space, weighs less than 100 lbs., handles 1,000 cartons/hour. It may be powered by air or electricity.



Uranium Gets

After an 18-year absence from the commercial scene, uranium is now being groomed for a comeback in the ceramic color industry. This week, Vitro Corp. of America's processing and manufacturing divisions are readying the first shipments of uranium pigments made from the depleted uranium hexafluoride that was recently released by AEC for industrial uses. (CW Technology Newsletter, Dec. 27).

In view of the extensive development in processing technology and the licensing restrictions that have grown out of AEC's monopolistic control over all nuclear materials, Vitro finds that the resumption of uranium pigments production is not simply a matter of picking up where it left off 18 years ago. For one thing, Vitro Rare Metals Co. (Canonsburg, Pa.) had to modify its pre-atomic age process that started with high-grade carnotite ore to a new method utilizing depleted uranium hexafluoride as a raw material. And Vitro Manufacturing Co. (Pittsburgh, Pa.) is currently exploring a wide range of new finished products, wrestling with the problem of license regulations on uranium pigment sales.

Old vs. New: The most important changes in Vitro's processing are the improvements made possible by starting with a highly purified raw material. Under the original setup, the feed material was carnotite ore (10-20% U_3O_8), which was hand-selected from rich deposits. This type of mining has passed from the scene, says John Summers, director of laboratories at Vitro Rare Metals; it would not be economically feasible today. But it paid off in the past, enabled the company to produce pigment intermediates of 98.5% purity by relatively simple wet-processing techniques. (For comparison, conventional processing of run-of-the-mine ore today yields concentrates that run about 70% U_3O_8.)

Under the new processing system, the depleted uranium hexafluoride is already in a highly purified form. The economic advantages of starting with this material are difficult to evaluate, says Summers, because the processes

Vitro specialists team old know-how, new tricks in making uranium colors.

Set for a Colorful Comeback

involve completely different techniques, and inflation rules out a dollar cost comparison between the 18-year-old route and the present operation. But raw-material cost is low, since AEC evaluates depleted uranium hexafluoride on its U-235 content. Vitro is purchasing the cheapest grade — depleted to less than 0.0022% U-235—for about $2.25/lb.

Processing advantages resulting from the use of high-purity starting material include higher efficiency, fewer steps and the elimination of uranium losses to by-products. Depletion of the radioactive isotope also makes the new products safer to handle, but the company still maintains (and AEC licensing regulations require) minimum safety precautions—about the same as those required for handling and processing natural-uranium source materials.

General information on the conventional processes used are readily available, says Summers. But there's still an important amount of know-how needed to turn out products tailored to pigment applications. Diuranate made by standard procedures is not the best for colors. And with the switch to a fluoride-starting material, special techniques had to be incorporated to eliminate the fluorine. Vitro's fluorine elimination procedure is confidential, says Summers. But the by-product fluorine is recoverable and is slated for future use in other products in Vitro's line.

Product Finishing: Though the final compounding of uranium pigments is much the same as before, Vitro Manufacturing Co. is also faced with some problems resulting from the 18-year hiatus. For one thing, all of the company's experts in uranium colors had retired; its newer ceramic engineers had no experience with these products. To bridge this gap in technology, the company recalled two experienced hands — Theodore Lenchner and Herb Fleck — as ceramics consultants.

Glaze technology has advanced considerably since uranium colors left the scene, says Joseph Swigart, general manager of Vitro Manufacturing. But the reinstated products have many highly desirable characteristics — better brilliance, higher degree of stability over wide range of kiln temperatures — to help them regain a sizable share of the ceramics color market. Biggest foreseeable demand: high-temperature orange glazes, that can be made only from uranium materials. Uranium may also recapture the market for translucent greens used for tinting glass, but will likely run into stiffer competition from yellow glazes developed in recent years.

To exploit the advances in uranium processing technology, Vitro is currently exploring a large number of potential new products. Says Swigart: "We're running 25 trials a day, five days a week, and still have six months to go. These studies may pay off in purples, deep maroons and other colors not now available in high-temperature glazes."

Future Outlook: Sales forecasting in the ceramics color industry is a difficult business, says Swigart. The market is subject to the whims of taste (women buy a major share of the finished glazed ware). And manufacturers of a color that is much in demand today may find the market gone tomorrow.

The sales picture is also complicated by AEC's licensing restrictions covering sales of all uranium products, including the depleted material used in ceramic colors. The required protective devices aren't much of a consideration for a large company, says Vitro. But for numerous small consumers, licensing red-tape is a serious deterrent to the use of uranium colors. Vitro expects to start shipping uranium colors later this month to several prospective customers that have applied for licenses.

Other color producers prepared to resume manufacture of uranium pigments include Ceramic Color & Chemical Manufacturing Co. (New Brighton, Pa.), B. F. Drakenfeld & Co., Inc. (New York) and Harshaw Chemical Co. (Cleveland, O.).

These companies agree that uranium's comeback in the ceramic industry is being seriously hampered by overstrict licensing requirements. And uranium's potential share of the ceramics pigment market is too limited, they feel, to warrant extensive process development until AEC relaxes its barrier of licensing red tape.

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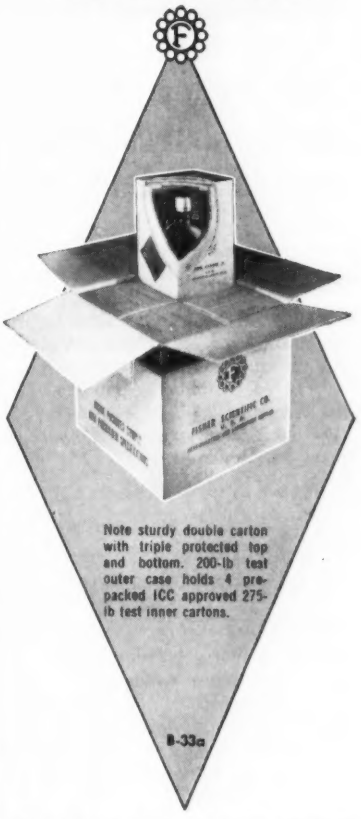
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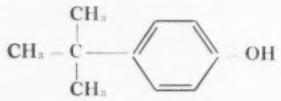

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para-Tertiary-butylphenol is also useful as an intermediate in the manufacture of other products of many types. Among these are antioxidants; water-proof starch finishes and adhesives; pour point depressors and emulsion breakers for petroleum oils; vinyl ether and dimethylol melamine type plastics; tackifiers and vulcanizers for rubber and curing agents for neoprene adhesives; synthetic lubricants; insecticides; and industrial odorants.

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Technology
Newsletter

CHEMICAL WEEK
January 3, 1959

First company to use Universal Oil Products' Butamer process for butane isomerization will be Standard Oil Co. of California. A 2,000-bbls./day unit now under construction at Socal's Richmond, Calif., refinery is due onstream in June '59.

Heart of the process: a fixed-bed, noble-metal-containing catalyst. Isobutane—converted with a volumetric efficiency of close to 100%—is obtained after reaction in hydrogen atmosphere at moderate temperature and pressure.

•

Diesel-powered fork trucks for chemical plants? It's one of the possibilities opened up by Detroit Diesel Division's new line of engines. The firm spent 1,250,000 engineering and 80,000 engine-test hours in developing the line, which ranges in horsepower from 20 to 1,650. Because diesels are nonsparking, the company feels they may find use in in-plant vehicles. And because of the wide range of horsepower availability, it feels they'll fit any pumping or stand-by requirement.

One of the features of the new engines is two-cycle operation (unique with this brand in the U.S.). Advantages claimed: higher horsepower per pound of engine weight; smoother operation, because a power stroke every two revolutions gives the effect of twice the number of cylinders; broad interchangeability of parts. Price range: $1,300 to approximately $15,000.

•

The British scientific effort will get more support from the government. The Ministry of Works now says that the Dept. of Scientific and Industrial Research will get almost $171 million over the next five years. This will be a $70-million boost over the allotment for the current five-year period ending March 31, '59.

The added money will go into stepped-up grants to universities. Postgraduate awards to students will be increased 10%/year, to 3,800 students by 1963-64. About $5 million/year will be spent on financing special research projects in British universities.

•

New emphasis on solid-fuels for missiles research should be the outcome of the U.S. Air Force's Bold Orion project. Its aim: to develop an air-borne solid-fuel missile with a 1,000-2,000-mile range.

•

A new sedative, being clinically evaluated by Riker Labs, (Los Angeles) has reportedly proved outstanding in putting cats and dogs to sleep without causing significant body changes. Chemically, it's 3,4,5-trimethoxy-benzoylglycine-diethylamide, is the most promising of a series of new acid amides with central nervous stimulating action.

A chemical that helps keep fish and shrimp alive in transport has been discovered by William McFarland, director of fisheries at the University of Texas Marine Institute (Port Aransas, Tex.) and Kenneth Norris, curator of Marineland of the Pacific. It's 2-amino-2-hydroxymethyl-1,3-propanediol, a buffer that controls the acidity resulting from carbon dioxide given off by the fish. It does this without precipitating salts out of the sea water in which the fish are stored. Acidity, not lack of oxygen, accounts for the high mortality of transported fish, the inventors report. They think the new chemical, called "tris buffer," should also be useful in home aquariums, transport of bait fish, and in transport of live fish for restocking conservation agencies.

•

A new process control system that "reasons" like a human operator this week brought Westinghouse Electric Corp. the 1958 Industrial Science Achievement Award of the American Assn. for the Advancement of Science. Dubbed Opcon—for optimizing control—the machine controls processes and manufacturing operations through experiment instead of by the complex, preset routine employed in conventional computer-control systems.

Opcon reverses a trend toward increasing complication in the automatic control of industrial processes, says J. A. Hutchinson, vice-president of engineering at Westinghouse. By eliminating the need for detailed knowledge of the interrelationships of process variables, Opcon is expected to simplify complete automation of many processes that have defied it before.

The mathematical logic in Opcon was developed about two years ago by Robert Hooke; units employing the system were made at Westinghouse Headquarters Manufacturing Laboratory. Improved full-scale systems were developed by the company's new-products engineering department.

One of the first Opcon systems automatically tests the entire capacitor output of Westinghouse's new plant in Bloomington, Ind. A more advanced version has been in operation for several months in a small dehydrogenation plant at Dow Chemical Co. (Midland, Mich.). Another Opcon is now being built to run a complete distillation column in Sun Oil Co.'s Marcus Hook, Pa., refinery.

•

Lab equipment makers had a pretty good year in '58, should do even better this year. That is how James Bengston, president of Chicago Apparatus Co., sizes up the sales picture. He estimates that '58 sales were up 3% over '57's $295 million. In '59, he says, they should easily top $315 million. Most of the expected increase, Bengston predicts, will come from industrial companies, which will be buying more scientific instruments.

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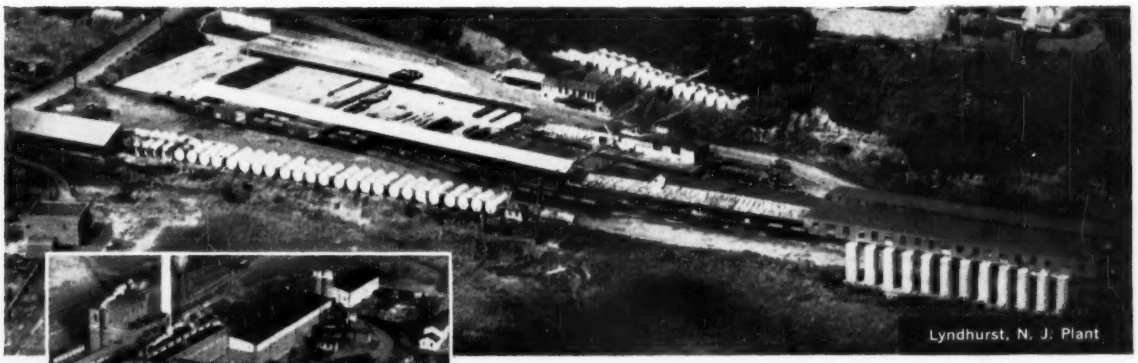

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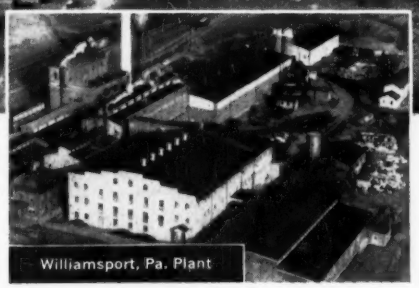

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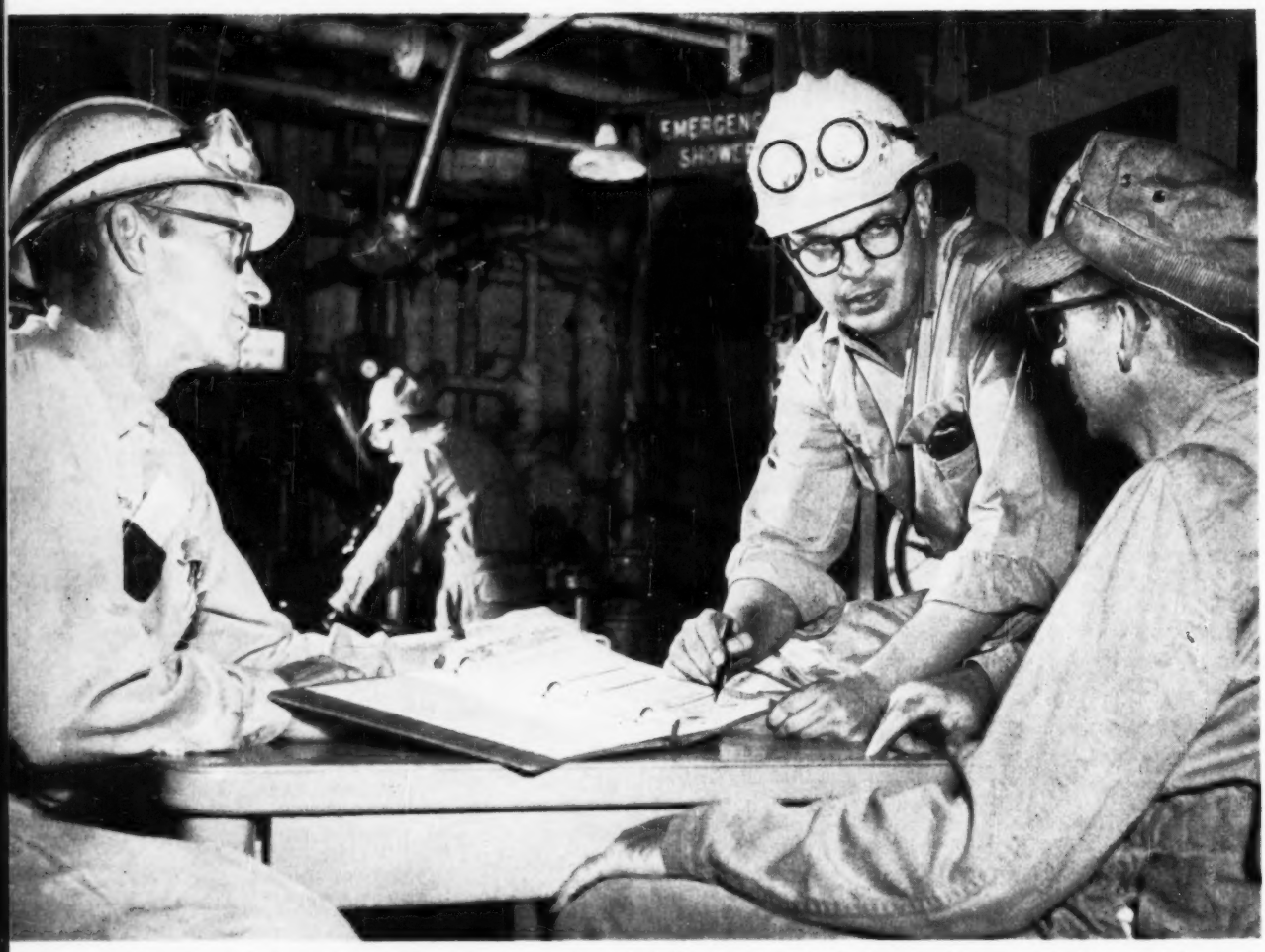

Department foreman, supervisor, operator* huddle over control chart at Monsanto's Krummrich plant.

Charting the Way to Quality Improvement

The discussion of the statistical quality-control chart shown in the photo (above) took place a few weeks ago in the p-nitrophenol department at Monsanto Chemical's Krummrich Plant (East St. Louis, Ill.). This week, with the charts now a part of operating routine, similar sessions are taking place at eight other Monsanto Organic Chemicals Division manufacturing locations.

The charts are now used by plant operators as well as supervisors in essentially every process.

Although there's nothing new about the statistical principles on which the charts are based (Bell Laboratories did much of the development work in the 1920s), not many chemical companies have adopted them with Monsanto's enthusiasm.

Elsewhere within the chemical industry, use of statistical quality control (SQC) varies from "extensive" to "very little."

Du Pont, for example, has thoroughly exploited the charts for quite a few years. SQC was "designed" into the Polychemicals Department's Parkersburg plant before operations began in '50. Union Carbide Chemicals uses the SQC chart to some extent, says it is also using other statistical tools. Dow Chemical reports it has been "extending its use as a production tool . . . over a number of years and expects to continue this effort." Members of one Dow division have an organization called the Dow Quality Society. Now in its second year, the society meets monthly, considers statistical methods as one of its prime activities.

Stauffer Chemical has tried SQC in a few processes, is now studying its potential at two plants. Others use it less.

At Opposite Ends: The head of quality control at one company explains the chemical industry's interest — or lack of it — this way: "It's a case of extremes. A chemical process

*Left to right: Ed Abegg, foreman; Jack Kellogg, supervisor; Sam Smythe, operator; all in the *p*-nitrophenol department.

is often so complex, statistically correct sampling is too expensive; or, in many batch processes, it is so easy to get a single representative sample, statistical techniques seem hardly worth it. An SQC chart that is used merely to tabulate process information — as it is sometimes used—isn't worth the paper it is plotted on."

Monsanto's Organic Chemicals Division points out that the SQC chart is a convenient way to tabulate analytical results; but the division's use of the charts is a good example of how they can be made to pay off.

Action Charts: Monsanto uses the SQC chart as a springboard for action. The chart quickly tells production personnel when a process is not performing as it should or as might be expected from past records. But it doesn't tell why the process isn't performing as expected. Used with operating-control data, however, the chart helps an intelligent search for the "whys" of process performance.

And, the beauty of the system is that additional personnel aren't needed to make it work, says Harry Hehner, the division's manager of quality control. Only Hehner's job, created a year ago to coordinate quality control throughout the division, is new. The big difference: with SQC charts, the plant personnel devote more of their time to the subject of quality control.

But the system wasn't put into full operation overnight. It took four years, including intensified efforts this past year, to make it a 100% activity.

First, the statistical principles had to be thoroughly understood by those preparing the charts. Personnel were selected from each plant, usually those most directly concerned with the quality-control function (e.g., at Nitro, chief analytical chemist, Jim Roark, was selected). These people were sent to special intensive university courses in statistics, with special emphasis on quality-control applications.

After the courses, the trained personnel, along with the technical production staff and research (when needed) set up the plant programs — decided on key data to be charted, set control limits, etc.

For the laboratory analysts, plant operators and foremen who plot the points from laboratory analysis or operating data, an extensive statistical course is not required. However, they must have a good understanding of how the charts are constructed and may be used. Training programs have been designed to take into account the technical background of the trainees.

But the supervisors must be able to interpret the chart for general trends in quality in addition to taking corrective action that may lead to process improvements or result in the setting of new, improved quality-control limits. For example, a product specifically might call for a maximum moisture content of 1%. Yet, below 0.3% moisture, the product might develop undesirable handling characteristics, even though still within the product specifications. This 0.3% level would be set as a lower control limit on the SQC chart.

And, a trend, within the chart's limits, to a tighter, more desirable range, might set off an investigation that would result in a permanent improvement. In this way, Bisphenol A's isomeric assay and color were improved. With another product, a low chloride content material was required and SQC charts helped establish a level that could be realistically attained in the plant.

Benefits Abound: Monsanto's Organic Chemicals Division is so sold on results achieved, it is able to rattle off 15 or more benefits, including lower production costs, and products that are more uniform and of high quality. Corrective action is often taken more quickly, reducing the amount of off-grade material that must be reworked or scrapped; and the charts are a constant reminder that quality must be emphasized.

And, although some companies feel that statistical quality control is built into the new automated processes, other firms, like Monsanto, point out that one of the best ways to check automated processes is with good statistical quality-control techniques. A technique may have to be changed to fit a process, but the SQC chart remains a basic tool.

Howard Minckler, the Organic Chemicals Division's director of manufacturing, sums up the division's stand: "The statistical-control chart is a powerful quality-control tool for production. But it must be used intelligently, along with operating-control data, if it is to give a complete story."

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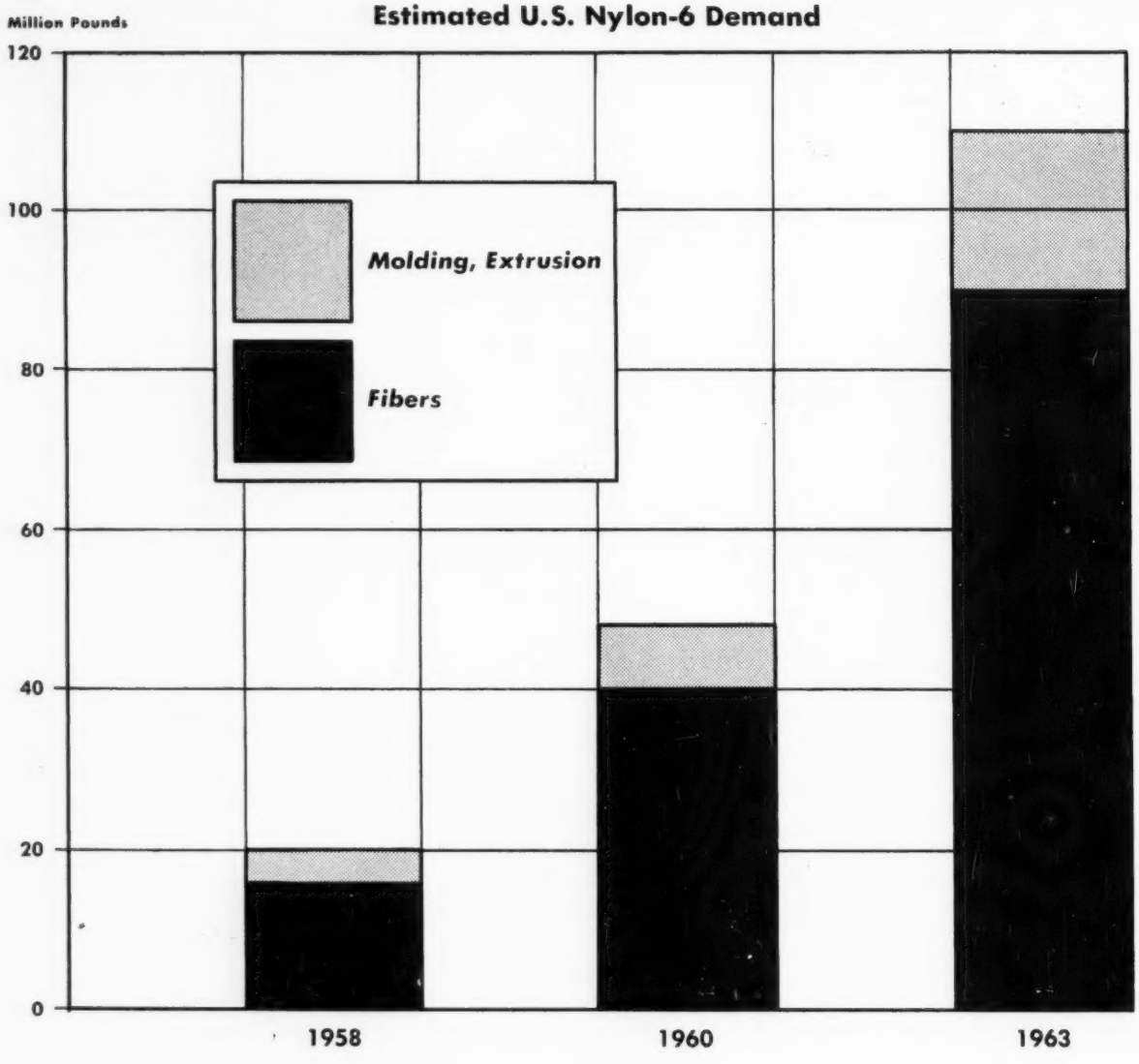

Fibers Weave Optimism in Nylon-6 Future

U.S. nylon producers this week are closing the books on '58 with a new evaluation of nylon-6 and its potential position in the U.S. plastics industry. Reason, of course, was Du Pont's recent report that because of a more economical route to production of caprolactam—monomer for nylon-6—the company would soon start building a 50-million-lbs./year caprolactam plant (CW, Nov. 8, '58, p. 21).

Although market observers have expressed conflicting opinions as to why Du Pont has thrown the hat into the caprolactam ring, consensus is that the move underscores the industry's optimistic outlook on the future of nylon-6. Total demand of fiber and plastic derived from caprolactam is expected to hit some 100-105 million lbs. by 1963, bring demand on an even keel with capacity. (Present projections of '63 capacity: Du Pont, 50 million lbs./year; National Aniline, 60 million lbs./year; Commercial Solvents' installation now in the works, an estimated 3 million lbs./year.)

Fibers will take some 80-90 million lbs. of '63's total nylon-6 demand; molding and extrusion requirements will absorb 15-20 million lbs. Compare this with last year's total nylon-6 demand of some 20 million lbs. (16 million lbs. for fibers, 4 million lbs. for plastics) and you have a spectacu-

lar 450% growth within a scant five years—if predictions prove accurate.

Nylon-6/6, by far the most important of the nylons, will be used at a 440-million-lbs. pace by '63. Some 400 million lbs. will be channeled for fiber requirements, the remainder for molding and extrusion. Last year total nylon-6/6 use was some 316 million lbs., with fiber needs siphoning off close to 300 million lbs.

Interestingly, in comparing total nylon fiber demand five years hence, nylon-6 will capture about 18% of the total polyamide fiber market, compared with some 5% last year. By '63, nylon-6 plastic will be filling 30% of the total nylon molding resin needs, compared with 25% in '58. It's apparent that future growth for nylon-6 is definitely keyed to fiber demand. And trade followers say that "fiber demand" is keyed to requirements for tire cord.

Nylon Tire Cord Factor? At present, bulk of the nation's nylon tire cord is nylon-6/6. Both the industry and tire producers are divided into two camps as to which of the two nylons is superior in tire making. Advocates of nylon-6/6 state that this nylon fiber offers certain technological advantages over the caprolactam-derived fiber. Proponents of nylon-6, of course, deny 6/6's superiority. While they will admit that nylon-6/6 has strongly established itself in the tire-cord market, they point out that the total market is a booming one, and predict that nylon-6 will firmly entrench itself here in the very near future.

Last year, nylon tire cords represented some 25% of the total U.S. tire-cord market, used up 85 million lbs. of nylon. Back in '52, nylon tire cord held only 3% of the market, represented an outlet for some 15 million lbs. of nylon. Nylon's gain has been at the expense of rayon, which took 74% of the total market in '58, compared with 80% in '52.

Although less than 1% of original equipment tires are now made of nylon tire cord, producers of tires now estimate that six out of every 10 replacement tires sold during '59 will be made of nylon cord. In '58, for the seventh consecutive year, replacement tire sales increased, hit a record of 59 million units, nearly double '51's sales of 34.2 million tires.

On the other hand, slump in auto output in '58 cut deeply into sales of rayon-cord, original-equipment tires. Passenger car production last year is estimated at some 4.3 million cars, far below the 6.1-million mark of the previous year. The slump reflected in backsliding '58 sales of original equipment tires, which were 30% under '57's demand.

Nylon makers, naturally, are eyeing the lush market of original equipment tires. Du Pont's recent report that it plans to sell caprolactam at below present prices may be the propelling force that will help nylon usurp rayon's leading position. Reason: trade speculation is that a price drop in caprolactam would mean a price cut in nylon-6 and, in turn, force one in nylon-6/6. This would make the polyamide fibers more competitive with rayon tire cord.

Another fast-growing outlet for nylon-6 fiber has been broadloom carpeting. Last year, some 18 million lbs. of nylon fiber—of which nylon-6 represented a substantial share—was used in floor coverings. Total was only 11 million lbs. in '56, and under 5 million lbs. in '53.

Molding, Extrusion Use Up: Despite keen competition from various other specialty plastics, market observers see a profitable growth for both nylon-6 and nylon-6/6 use in molding and extrusion. Last year about 20 million lbs. of both types of nylons channeled into plastic needs; 16 million lbs. was nylon-6/6, some 4 million lbs. was nylon-6. By '63, most marketers predict that nylon plastic may be as high as 60 million lbs., with nylon-6/6 taking a 40-million-lb. slice; the rest, nylon-6. However, this hefty growth will take place only if nylon plastics are on a more competitive price basis with other specialized plastics.

At present, about 80% of nylon plastic is used in molding applications, the remainder goes into extrusion uses. By '63, about 60% of total nylon plastic will be used for molding, while extrusion uses will take about 40%. Nylon-6 is expected to score heavily here.

In short, nylon appears to have a rosy future, particularly so if price cuts materialize.

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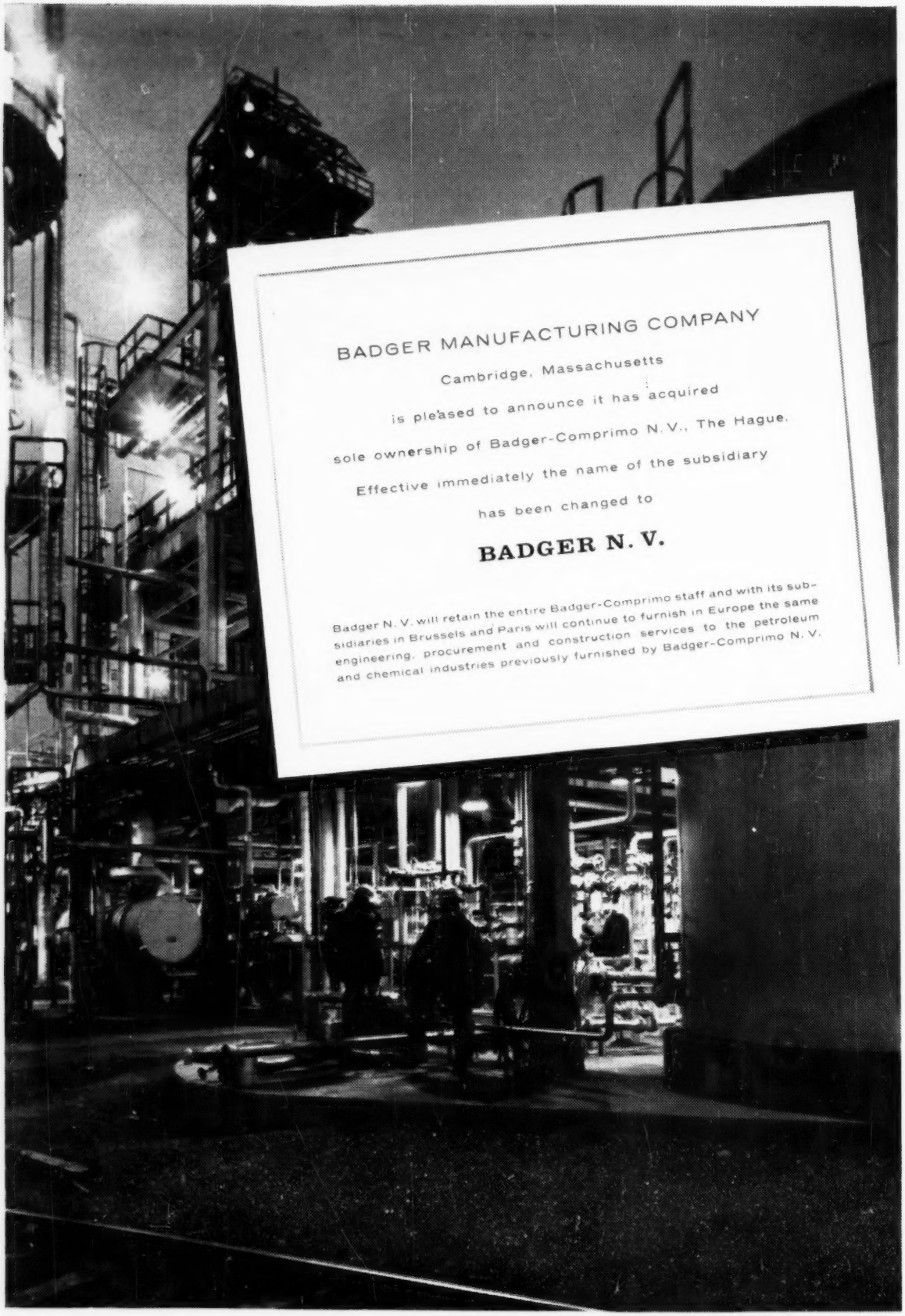
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Market Newsletter

CHEMICAL WEEK
January 3, 1959

An across-the-board 2¢/lb. (11%) price reduction on polyvinyl acetate emulsions, initiated last week by Du Pont, brings tank-car prices of homopolymer grades down to 16¢/lb., copolymer grades to 18¢/lb.

The move, says Du Pont, makes PVA the lowest-priced of three widely used latex resins for water-based paints and is made in hopes of spurring increased use of PVA emulsions in paints, grease-resistant coatings for paper and paperboard, adhesives, textiles.

Other producers are going along with Du Pont's PVA price reduction—but only in part. Early reports from other suppliers indicate that homopolymer prices are being reduced the same amount—2¢/lb.—but copolymer tags reportedly are being cut only 1½¢/lb. by the rest of the industry. Reason: "Costs of other ingredients in the copolymers haven't declined; hence, price reductions on PVA copolymer emulsions must be more moderate."

Some competitors explain Du Pont's more generous price cut on copolymer by assertions that it isn't a major factor in the copolymer field, can better afford the extra ½¢ decrease. Du Pont's answer: "Cost of ingredients is only part of the picture influencing amount of reduction; more important is the fact that we want the business."

Du Pont further emphasizes that its PVA copolymers are not regarded as "tag-along products," points out that its new PVA emulsion unit at Toledo, O., will be ready for operation this month. One product (Elvacet 1423) to be produced at the new plant is described as a PVA copolymer.

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A new Southern-states industry based on "peckerwoods" and lumber residues is underscored in a special report just completed by the U.S. Commerce Dept.'s Business & Defense Services Administration. The survey shows that a total of 20 particleboard manufacturers already operating in Tennessee, Mississippi, Kentucky, Arkansas, Texas and the Carolinas produced nearly 45 million sq. ft. of scrap wood-synthetic resin products in '57; total U.S. particleboard output was put at nearly 183 million sq. ft. (Industry sources estimate '57 output closer to 200 million sq. ft.; *see CW, Dec. 27, '58, p. 73*). North Carolina, biggest particleboard producer in the South, turned out 28 million sq. ft. in '57.

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Last week's "unconfirmed" reports of ammonia price cuts in Utah are unfounded. The reported $8/ton cut in the anhydrous ammonia, to $80/ton, was in fact made last October, to offset competitive impact of West Coast ammonia when prices there were reduced from $88 to $66/ton (*CW Market Newsletter, Sept. 20, Nov. 1 and 8, '58*). The lower price in Utah was posted by U.S. Steel to re-establish the firm's freight advantage in the Utah area.

A $4/ton price increase slated for Jan. 1 is for Eastern sales of anhydrous ammonia; the new $88/ton price in effect in the East ends the recent seasonal discount. Ammonia price in Utah will remain at $80, says U.S. Steel.

•

Pfizer will cut its tartaric acid price 16%, to 41¢/lb., in carload and truckload quantities on Jan. 5; smaller reductions apply to lesser quantities.

The reduced tabs are for tartaric imported from Spain, but Pfizer points out that the cut does not increase the differential between imported tartaric and domestic material. Reason: "Other importers have already been selling foreign material at these lower prices."

Pfizer spokesmen say the firm's domestic tartaric output is suspended indefinitely, but won't confirm or deny trade talk that U.S.-made antibiotics are being bartered for the Spanish material.

Meanwhile, Stauffer Chemical—leading domestic maker of tartaric acid—reports it will make no move to match lower tabs on imported material. Domestic tartaric is listed at 49-51¢/lb., depending on quantity.

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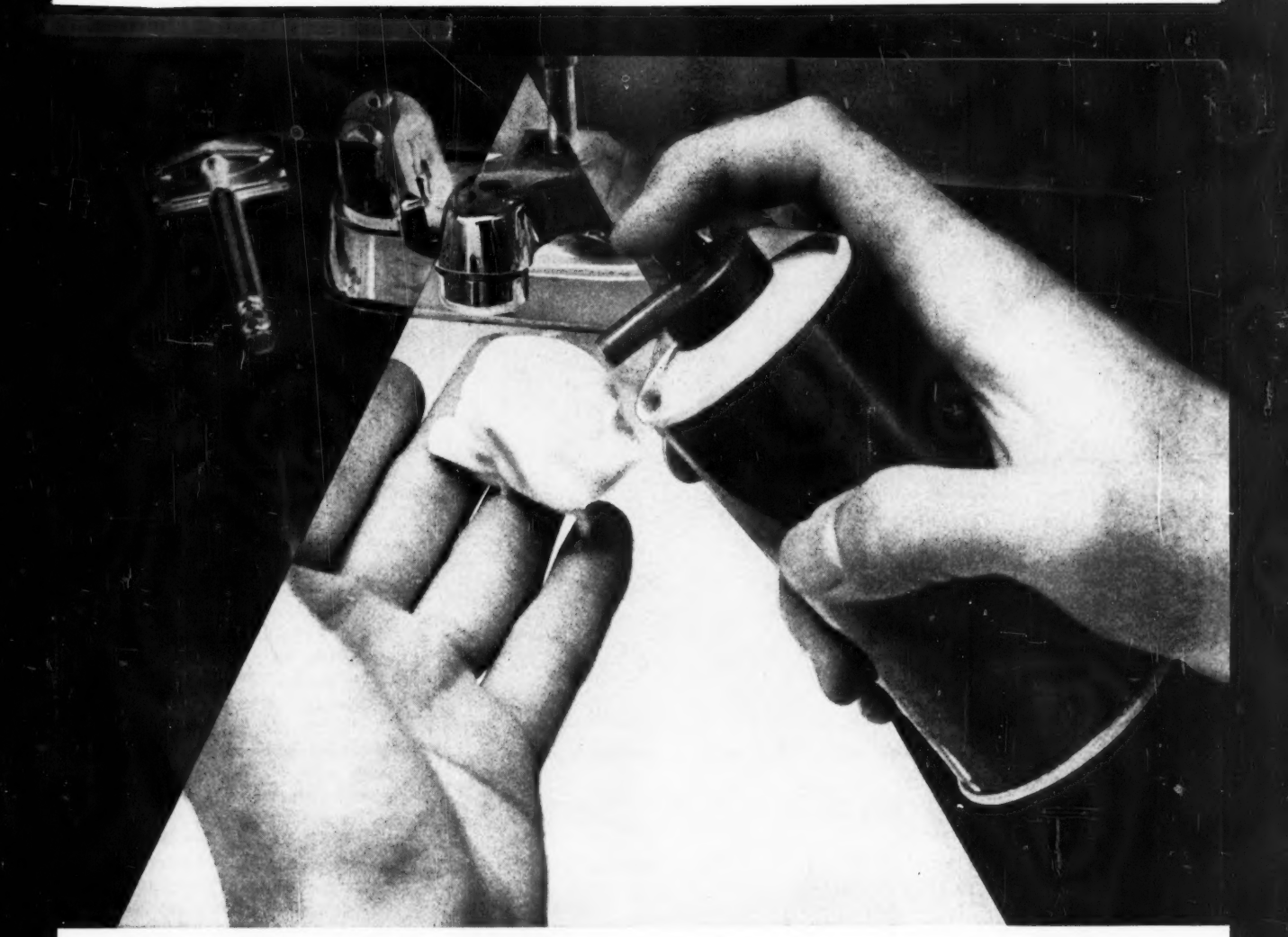
U. S. sulfur consumption increased in late '58, but not enough to push the year's total demand to '57 levels, according to Freeport Sulphur's annual review of the industry. Salient statistics reported by the firm:

U.S. sulfur output, from all sources, totaled an estimated 6.2 million long tons in '58, 7 million tons in '57. The drop was attributed to lower industrial use, increased imports, cutback in stockpiling. Frasch-produced sulfur output was 4.65 million tons in '58—630,000 tons came from refinery gases and natural sour gas, 400,000 tons were contained in pyrites, 520,000 tons came from other sources.

Both imports and exports of sulfur were up in '58. Imports hit a record 760,000 tons (669,000 in '57), mostly from Mexico. Exports were an estimated 1.575 million tons, 75,000 tons less than the record shipment in '56.

SELECTED PRICE CHANGES—WEEK ENDING DECEMBER 29, 1958

	Change	New Price
UP		
Carnauba wax, chalky, bgs., ton lots	$0.02	$0.70
Dried blood, 16-16½% ammonia, per unit-ton	0.25	6.75
DOWN		
Polyvinyl acetate, homopolymers, tanks	$0.02	$0.16
Polyvinyl acetate, copolymers, tanks	0.02	0.18



This new packaging idea sells 66% of a $60,000,000 market

In 1958 some $40,000,000 worth of aerosol shave creams will be sold. Aerosol packaging has captured about ⅔ of the $60,000,000 shaving-cream market and has revolutionized sales for hair fixatives, colognes, insecticides and a host of other products.

The reasons for this success are simple. Aerosols deliver a product in a completely new form—a form that's easier to use and apply, without mess or waste. If your product can be brushed, poured or sprayed, you stand a good chance to add new sales appeal—create a positive competitive advantage—if you package it in an aerosol.

It's not necessary to set up your own aerosol packaging line to enter this field. A custom filler near you has the knowledge and equipment to help you. He can package your formulation for testing and help you from planning through production.

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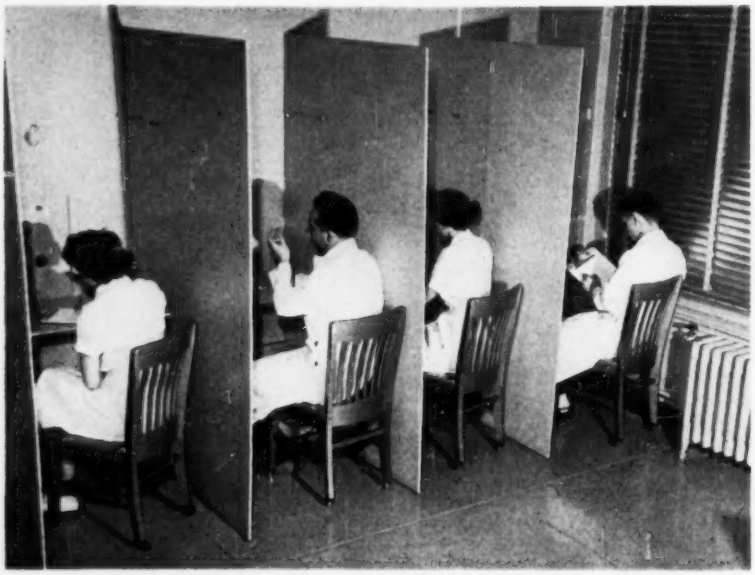

Taste testing will weigh merits of quassin in alcohol denaturing.

Seeking an Out from Brucine

Producers and users of brucine-denatured SDA-40 ethyl alcohol are turning to taste-test research programs in seeking answers to stiff sales and procurement problems. Because of a variety of complex and interacting factors, brucine and its sulfate salt have become critically short. Prices have skyrocketed from 8¢/oz. about 18 months ago to a present range of $1.45-$2.25/oz.

It's just such reasons that will underscore a statement in a few weeks by U.S. Industrial Chemicals that a research program for a new brucine substitute is under way. And, the Internal Revenue Service's Alcohol and Tobacco Tax Division (ATTD) will also continue its so-far-unproductive quest for brucine alternatives. Publicker's suppliers are also researching new substitutes.

To ease the shortage, ATTD recently modified its denaturing formulas: it authorized reduction of the brucine concentration from 3 oz. to 1.5 oz./100 gal. of alcohol and approved the substitution at the 1.5-oz. level of quassin (a wood derivative).

Brucine and brucine sulfate imports have been declining in recent years. In '53, some 308,904 oz. were brought in. By '56, only 98,616 oz. were clearing customs. Last year, the Tariff Commission pegged imports at 87,608 oz. (Some trade sources, however, claim that imports* are much higher, running at least in the 200,000-300,000-oz. range.) Meanwhile, SDA-40 alcohol shipments from plant to user have risen from 5 million gal. in '54 to 8.6 million gal. in fiscal '58.

Difficulties facing formulators of brucine alcohol stem directly from the shortage. The pinch has made it difficult to satisfy the demand from the cosmetic and toiletry industries. And the price rise has contributed to higher costs. Brucine makes a highly desirable denaturant because it imparts an extremely bitter taste and because it lacks an odor, and thus doesn't interfere with delicate perfume scents.

Behind the Shortage: Brucine (dimethoxy strychnine) is a by-product of strychnine extraction from *nux-vomica* beans. British producers blame a poor *nux-vomica* growing season in India as the chief reason for the current shortage. Another important reason, they add, is vastly stepped up purchases by U.S. oil companies for undisclosed applications, Carnegies of Welwyn Ltd. advises *CW* that it is now producing two to three times as much brucine (10,000-12,000 oz./-week) as it ever has before. Much of the output is sold to U.S. oil companies.

Brucine importers also note surprisingly large purchases of the alkaloid by petroleum companies. Although the material has some use in oil analytical procedures, many doubt that this application would take the quantities involved. Traders speculate that the "mystery" brucine is going into exotic fuels or atomic energy applications.

Continental companies, say British producers, have stopped brucine production, thus contributing to the shortage. The last U.S. supplier, Merck, has stopped strychnine production because of declining rodenticide markets for strychnine.

Meanwhile, the brucine market has become generally confused. Some importers report that they have been forced on occasion to buy strychnine in order to obtain brucine. And there are unconfirmed reports that speculators cornered the market some months ago and are now reaping a windfall. Indian sources report that there has been limited speculation in *nux-vomica*, itself.

Because brucine prices now hover in the $1.45-$2.25 range, purchasing agents are resisting. One purchaser for a large alcohol company recently took delivery at 62¢/oz. And a few importers are honoring old brucine contracts calling for 50¢/oz. material. Importers are bitter over the fact that there is a U.S. tariff. There is no need for this, they claim, while there is no American product in competition with brucine. Moreover, brucine-denatured vegetable oils enter the U.S. duty-free.

Quassin to the Rescue? The brucine shortage was directly responsible for the ATTD's approval of quassin as a denaturant. Though quassin has been widely used in Canada for years, U.S. sellers of quassin-denatured alcohol may have a tough selling job ahead.

Drug and cosmetic companies in the U.S. have used brucine-denatured alcohol for years, and their products have won wide-scale consumer acceptance. A switch to quassin entails, at the very least, extensive testing pro-

*Tariff Commission figures are very likely incomplete.

grams. Producers lack knowledge of quassin's toxicity, odor effects, effects on essential oils in formulations, skin irritation properties and other factors. Some claim that quassin's flavor, which differs from that of brucine, may raise problems in antiseptic formulations, among others. Others report that it is photosensitive in some formulations.

Moreover, quassin affords no cost advantage: at $1.80 oz., it is as expensive as brucine is now. And quassin has also been in short supply. Because of the unexpected demand, S. B. Penick (major U.S. producer) and importers have been unable to meet all orders. And some U.S. quassin is moving into Canada, where it commands a $2.50/oz. price. Some brucine importers, claim that quassin is extended with other substances.

Quassin, however, may take over a substantial chunk of the market because it should be readily available. Penick expects that favorable Caribbean weather conditions will bring bumper crops of *Quassia* bark. And the company is expanding processing facilities to meet demands.

And, research formulators, such as Evans Chemetics, report few problems in using quassin for brucine.

But brucine supplies may improve. Indications are that India's '59 *nux-vomica* crop will be markedly bigger. (British producers, however, feel that new U.S. demand will more than outweigh improved *nux-vomica* supplies.) Neither British nor Indian sources expect quassin to materially affect the market for brucine.

The uncertainties in the brucine-quassin situation are, of course, behind USI's research project for substitutes. The firm is reluctant to reveal progress to date but does report that taste testing represents much of the program. Shell Chemical and Union Carbide, also factors in the market, are not now researching brucine substitutes. The Internal Revenue Service has tested some 15 materials (mainly quaternary compounds and naturally extracted alcohols). But they didn't prove good substitutes.

Meanwhile, U.S. cosmetic companies are taking a close look at quassin. If brucine remains tight, SDA-40 alcohol customers will have to compromise their objections or take their chances with a shaky brucine supply situation.

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CW PHOTO—FRANK AMELIA

Toohy, Squibb make medallion a sales focal point as . . .

Squibb Tops Century Mark

How much mileage can you get from a company milestone? Plenty, says E. R. Squibb & Sons, division of Olin Mathieson. As Squibb last week wound up its centennial-year celebration. President Jack Toohy commented: "We've just had the best sales year in our history."

Although '58 has been a good year for drugs generally, Toohy credits centennial efforts with a large share of this year's sales above previous highs. "We spelled celebration with an S," he says. But more than that, Squibb added to its program numerous touches that prompted an official from a competing company to remark, "You've squeezed more out of a centennial than anything I've ever seen."

At the outset of planning for celebration of the company's founding in Sept. 1858 by Dr. Edward Robinson Squibb, the company tried to create a unifying atmosphere for employees. Management figured that would help stimulate employee interest in the company and quicken their pride in its achievements. As early as Jan. '57, when detailed planning got under way, steps were taken to provide such materials as centennial lapel pins, a book detailing history of the founder, and other items that would inspire a sense of participation among employees in the company's success.

Make It Useful: An effort to add scientific value to the centennial was the organization of a series of lectures —which will continue into May '59 —by top medical men of the English-speaking world. These lectures are being presented at medical schools in the U.S. Toohy reports that 90% of medical school deans invited to authorize the lectures at their schools responded favorably.

In other areas, the company made efforts to channel already existing programs into the centennial limelight.

Research projects were also included. For example, one program that had been under discussion for some time was rescheduled to begin in '58. This was a study at Hartford Hospital in Hartford, Conn. The work involves electronic monitoring of patients' bodily responses while under anesthesia and during the stress of operations. Squibb says it's the first research in this field.

Squibb also took advantage of a wide group of promotional opportunities. All letterheads, brochure material and other printed matter were imprinted with reproductions of the centennial seal. The seal itself was especially designed for the occasion, as were the pins worn by salesmen and other Squibb employees who asked for them. Squibb also arranged to make available to author Lawrence G. Blochman the handwritten journals of founder E. R. Squibb, so that he could produce a historical book (published by Simon & Schuster) about Dr. Squibb. The book was distributed to members of the Squibb organization as well as through retail book outlets.

One of the program highlights, Toohy points out, was a giant sales meeting, the first all-company meeting in 30 years, which brought more than 1,000 Squibb salesmen together in New York City. At that time, the company hoped that September, the founding month, would be the best in company history. It was a "great" month, Toohy says, the firm's second best. (High mark was in Oct. '57, when the Asian flu vaccine was in great demand.)

Cautious Advice: Advising others on using similar techniques is a difficult thing, say Toohy and George S. Squibb, a descendant of the founder, and assistant director of sales.

Both believe a successful program involves a service (e.g., scientific) that may be implemented by converting normal activities into promotional channels. Cost? Toohy comments that it was not a large extra expenditure because of the conversion of normal programs. The sales meeting and promotion, he estimates, may have added about 5% to normal selling costs. Unofficial estimates are that less than

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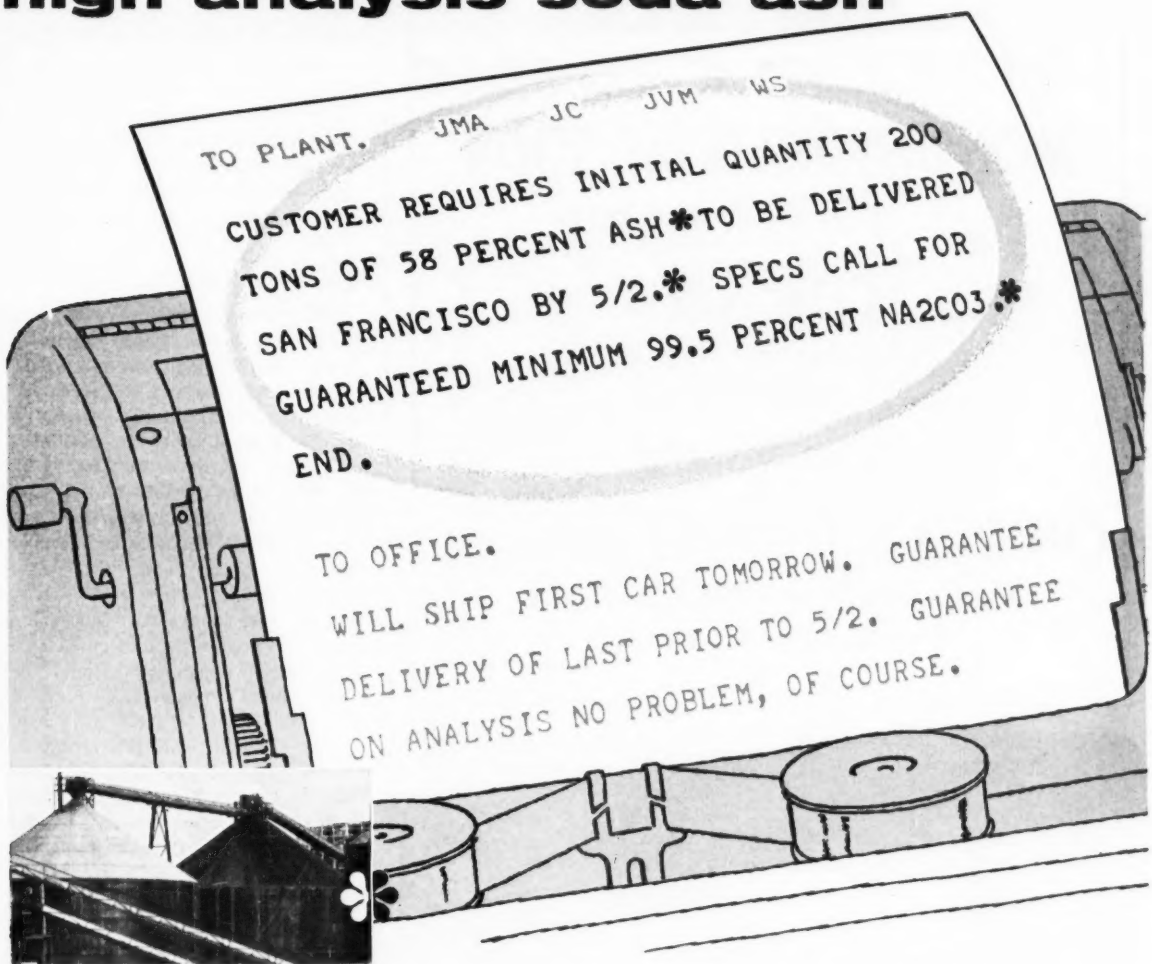
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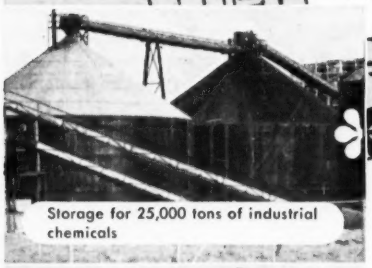
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$500,000 may have been channeled into the program, including many converted to the special approach.

But both Squibb and Toohy point out that one of the biggest hazards is the inclination to play every angle for promotion. If not watched carefully, that could result in serious overemphasis, resulting not only in costliness but also in making a poor impression on the public.

OCAW Complains

Oil, Chemical & Atomic Workers Union has followed up its earlier threats and has filed formal and detailed complaints with the AFL-CIO executive council alleging unconstitutional organizing activities in OCAW's jurisdiction by the AFL-CIO Metal Trades Dept. OCAW claims that AFL-CIO's Building Trades Dept. was causing OCAW members to lose their jobs.

O. A. Knight, president of OCAW, said, in the complaint: "Our union finds itself constantly confronted with organizing competition from the Metal Trades Councils in all parts of the U.S." Knight charged the Metal Trades Council with interfering in OCAW organizing work at Standard Oil Co. (Baton Rouge, La.), Wyandotte Chemical (Geismar, La.), W. R. Grace & Co.'s polymer chemicals division (Baton Rouge), Western Nuclear Corp. (Jeffrey City, Wyo.), Union Carbide Chemicals (Long Mott, Tex.) and American Gilsonite Co. (Fita, Colo.)

More on Secrecy Suit

The confusion surrounding Monsanto's phosphorus trade secrets suit (CW, Sept. 27, p. 22) last week melted away somewhat with the dismissal of a counterclaim against the St. Louis company.

The counterclaim, charging Monsanto with scheming "to create a monopoly in the manufacture of elemental phosphorus," had been filed in U.S. district court (Pocatello, Ida.) by Central Farmers Fertilizer Co. (Chicago). Now, however, the court has essentially agreed with Monsanto's argument that CFF's counterclaim isn't technically appropriate.

Background: Central Farmers is one of three defendants in a suit filed in the same court by Monsanto, charg-

ing illegal use of its trade secrets in designing and building CFF's elemental phosphorus unit now under construction at Georgetown Canyon, Ida. Also named as defendants: Charles Miller, former Monsanto employee, and F. C. Torkelson Co. (Salt Lake City), former design engineers on the Georgetown Canyon project.

Monsanto's suit—currently in the trial stage—and CFF's counterclaim followed in rapid succession a first-round victory by Monsanto in U.S. district court in Salt Lake City (*CW, Aug. 9, p. 24*). First-round action ended when Federal Judge A. Sherman Christenson permanently enjoined Miller from using Monsanto's trade secrets, and ordered him to return to the company 102 documents that were found to have been "unlawfully appropriated" when he left Monsanto. Miller until recently was employed by Central Farmers.

KEY CHANGES

Bernard Berk to director, Steroid Preparative Laboratory, Squibb Institute for Medical Research (New Brunswick, N.J.), division of Olin Mathieson Chemical Corp.

William von Fischer to vice-president—research, and **James W. Pollard** to vice-president—engineering, The Glidden Co. (Cleveland).

Harold G. Shelton to general manager, Dyestuff & Chemical Division, General Aniline & Film Corp. (New York).

Nels W. Stalheim to chairman and chief executive officer, Federal Uranium Corp. (Salt Lake City).

Harper Woodward to director, Vitro Corp. of America (New York).

J. C. Roberts to president, Firestone Synthetic Rubber & Latex Co., division; **E. H. Strobel** to Des Moines plant manager; Firestone Tire & Rubber Co. (Akron).

Eugene C. Swift to president, Sharples Corp. (Philadelphia).

RETIRED

Lester B. Gordon, vice-president, Solvay Process Division, Allied Chemical Corp.

E. S. Nickerson, general manager, Fabrics and Finishes Dept., Du Pont.

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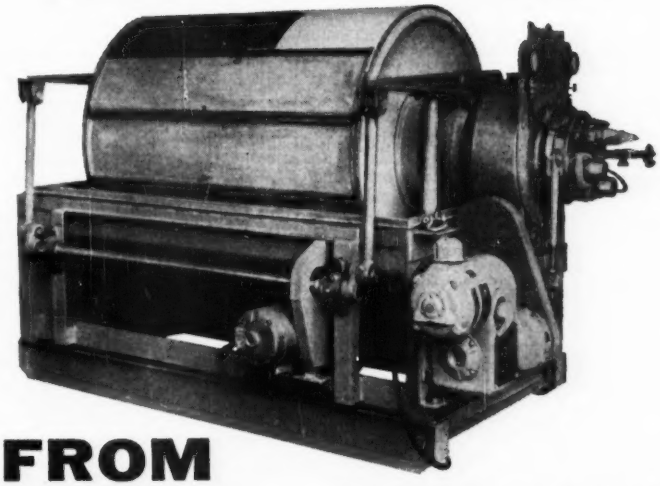

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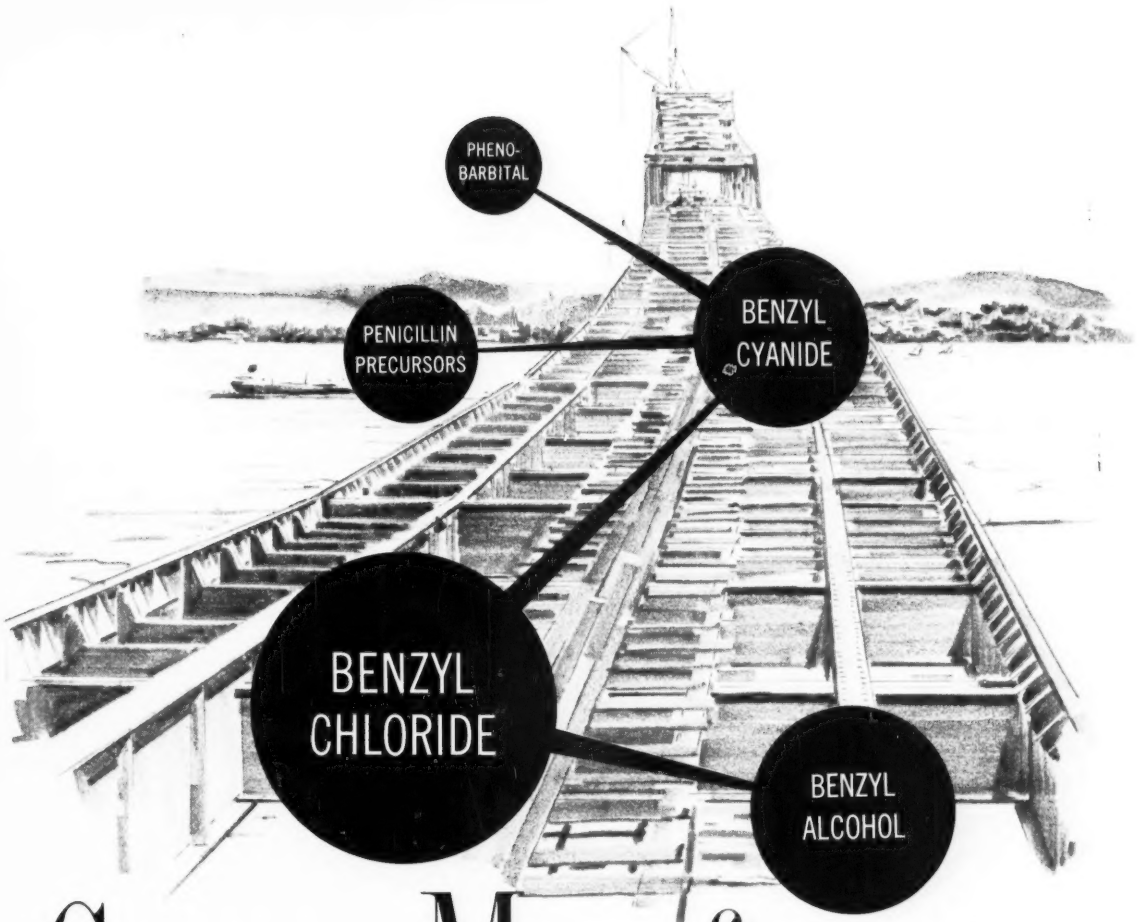

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